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AMERICAN NURSERYMAN

Chief Exponent of the American Nursery Trade

Vol. LIX No. 12

JUNE 15, 1934

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AMERICAN NURSERYMAN

Chief Exponent of the Nursery Trade

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EDITORIAL communications on subjects connected with nurseries, arboriculture or other phases of commercial horticulture are welcomed by the editor. Also articles on the subjects and papers prepared for conventions of nursery associations.

A. A. N. CONVENTION.

Preparations are being made for an important and well attended convention of the American Association of Nurserymen at the Hotel New Yorker, New York city, July 17 to 19. Announcement of the program planned appeared in the June 1 issue of The American Nurseryman. In this issue appears the half-page advertisement of the convention committee, soliciting the support of members in the trade exhibition.

How greatly has the interest of members increased in the past year is shown by Secretary Sizemore's report that to June 1 dues collected are over fifty per cent larger than a year ago in dollar total, while there is an increase of more than twenty-five per cent in the number who have paid dues. The badge book advertising has shown a similar increase, amounting to sixty-five per cent over last year.

Nurserymen are invited to attend the convention whether they are members of the association or not, and the gathering is expected to be a big one.

The American Nurseryman will feature the convention report in its mid-

The Mirror of the Trade

month July issue, the forms being held a couple of days past its regular issue date for that purpose. A large and important Convention Number will be issued.

DROUGHT CAUSES LOSSES.

The long-continued drought over the central portion of the country this spring has made itself seriously felt in nurseries, though the extent of the damage will depend upon the amount of subsequent rainfall. Showers early this month brought much needed moisture in some sections, and if additional rain falls in sufficient quantity, some stock may be saved, though it will receive a setback.

In the nurseries, of course, the effect has been most marked on lining-out stock in the field where water was not available. The demand already noted for this class of material will doubtless be accentuated in consequence.

On top of the winterkilling, the dryness took strong toll in home gardens, so that replacements will be needed. The prospect, therefore, is for a better demand for nursery stock.

In the rural regions, there is the drawback of the loss which the dry weather has meant to the purchasing power of the farmers. Those who are with crops will likely get the more money for what they produce, but in localities where the drought was severe and prolonged, harvest may be small indeed.

Reports from several different districts are given on a later page of this issue of The American Nurseryman indicating the effects of the drought on stock and on sales in several states of the central west.

DUTCH ELM DISEASE.

In view of the widespread attention given the so-called Dutch elm disease, the careful survey and conservative conclusions from the department of plant pathology of the New Jersey agricultural experiment station, presented in an article in this issue, are

of distinct reassurance to the admirers of the American elm.

The alarm which has been sounded with regard to the disease is illustrated by an item in the clip sheet issued last week by the press service of the United States Department of Agriculture, headed "Dutch Disease Menaces Elms of United States," and carrying in its opening paragraph the statement, "The American elm, one of the country's finest shade trees, which grows from coast to coast and from Canada to Mexico, will be in danger of extinction, if the Dutch elm disease shows the same virulence in the United States as in Europe, in the opinion of scientists in the United States Department of Agriculture."

More optimistic is the conclusion of the New Jersey station, that the limited area in which the elm disease has so far been found and its slow rate of progress render improbable the disappearance of the American elm.

After the coming summer's work, a better idea will be obtained as to the spread of the disease. Nurserymen may assist by sending to the Dutch Elm Disease Laboratory, Room 207, Post Office building, Morristown, N. J., specimens from any elm which has symptoms of the disease. The exact location of the elm should be given, and twigs the size of a lead pencil or larger which show the characteristic brown streaks should be forwarded for inspection. The characteristics of the disease are wilting, yellow or brown leaves and brown streaks in the young wood, where a clean-cut twig will show a circular brownish discoloration in the sap wood.

THE spring movement of stock has shown that supplies are none too plentiful, and those who were in position to meet the demand have benefited accordingly. While prices have not strengthened to the degree desired by producers, there has been opportunity to turn stock into cash, a different story than in the spring of the past two years.

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AMERICAN NURSERYMAN

[Registered U. S. Patent Office]

The Chief Exponent of the American Nursery Trade

*The Nurseryman's Forte:
To Make America More Beautiful and Fruitful*

Vol. LIX

JUNE 15, 1934

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Southwestern Convention at Tyler

Early Annual Meeting of Association Held to Adopt Marketing Agreement for Southwestern States

The tentative marketing agreement for nurserymen in the southwestern states of Texas, Oklahoma, Arkansas and Louisiana, concerning which there have been a number of group meetings of various interests during the last month, was finally adopted by the Southwestern Association of Nurserymen at its convention at Tyler, Tex., June 13 to 15, and sent to Washington, D. C., to the meeting scheduled for June 18 at which officials of the Agricultural Adjustment Administration and the Nurserymen's National Planning Committee were to consider a marketing agreement on a national scale. Edward L. Baker, Fort Worth, Tex., retiring president of the association, was delegated to take the document to Washington and, with E. S. Hamilton, Houston attorney, who was already in Washington in the interest of the southwestern marketing agreement, represent the nurserymen of the region.

It was not without much effort on the part of advocates of the agreement, however, that it was adopted by the convention. The tentative agreement, the principal features of which were published in the May 15 issue of *The American Nurseryman*, was prepared for the southwestern nurserymen by Attorney Hamilton, who used the proposed agreement submitted to the industry by the Nurserymen's National Planning Committee as a basis and changed it to suit the conditions prevailing in the southwest.

Change Price Clause.

The original southwestern document contained an open price clause, but this was changed at the convention to a clause providing for minimum retail prices from which suitable and predetermined discounts will be allowed according to the class of purchaser. The East Texas Rose Growers' Association objected to the inclusion of the term "roses" in the definition of nursery stock and secured the approval of the convention in striking out that term and substituting a phrase, "not including rosebushes," in the definition.

The rose growers in east Texas are willing to become a party to a marketing agreement which is national in scope, but do not want to participate in a regional agreement, because their marketing problems are entirely different from those of producers of general nursery stock in the southwest; the rose growers' markets are principally in the

east and the north, while other producers' markets are generally within the region for which the agreement is drafted.

Members of the association in Oklahoma at first were opposed to any kind of price clause, because they are forced to meet competition from members of the industry in states not within the southwest region and, consequently, not under the provisions of the agreement, but representatives at the convention finally agreed to the adoption of the document when assurances were given that they would be permitted to meet outside competition.

Henson Elected President.

W. V. Henson, of the Texas Pecan Nursery and the Dixie Rose Nursery, Tyler, Tex., was elected president of the association for the next year. J. O. Lambert, Jr., of the Lambert Landscape Co., Shreveport, La., was elected vice-president; Mrs. Thomas B. Foster, Denton, Tex., was reelected secretary-treasurer, and Leo Conard, Stigler, Okla., and Lige Glass, Farmersville, Tex., were elected directors. Mineral Wells, Tex., was chosen as the scene of the next convention, which will also be held in the third week in June, the by-laws of the association having been changed to per-

mit a June meeting instead of the former September date.

The convention, which was the seventeenth annual meeting of the association, was officially opened Thursday morning, June 14, by President Edward L. Baker, but the preceding day, June 13, had been devoted to committee meetings and a session of the Southwestern Nurserymen's Co-operative Association, Inc. This initial meeting of the co-operative organization was actually the opening event of the 3-day gathering.

Urge Diversification.

Visiting nurserymen were welcomed to Tyler at a luncheon at the Blackstone hotel Wednesday noon. Gus Taylor, president of the Tyler chamber of commerce and president of the Citizens' National bank, in an address which showed an intimate knowledge of the nursery business, extended an official welcome. The luncheon affair was presided over by W. V. Henson. Mr. Taylor spoke on a subject which he knows well, east Texas roses, and then advised his hearers to practice diversification; he urged a program of diversification for all nurserymen, including the rose growers in his own district, so that the vagaries of the weather or business conditions will not find them entirely without resources. The tables held baskets of roses from the Browne Florist & Landscape Service.

The first of the entertainment features offered by Tyler nurserymen was a box lunch picnic Wednesday evening at a near-by lake.

Contributions for Planning Group.

A huge basket of roses from the P. C. Moore Nursery & Floral Co., Tyler, was at the speakers' table at the opening session Thursday morning, June 14, when Rev. S. S. McKenney gave the invocation. Russell S. Rhodes, energetic general manager of the Tyler chamber of commerce, who has traveled throughout the country disseminating information on east Texas roses, welcomed the nurserymen to Tyler; a fitting response was made by J. O. Lambert, Jr. The secretary's report was postponed until a later session, but an announcement was made of a request from Charles Sizemore, secretary of the American Association of Nurserymen, for contributions to help defray the expenses of the Nurserymen's National Planning Committee.

Vice-president N. D. Woods, Oklahoma



W. V. Henson.

City, Okla., in his report, cited the success of the activities of the Oklahoma City Retail Nurserymen's Association this spring. The address of President Baker was then given.

President's Address.

President Baker explained the operation of the Southwestern Nurserymen's Coöperative Association, incorporated under the laws of Texas, which was sponsored by the regional association last year, and urged support of its activities. He called attention particularly to its successful control of department store competition. After his formal address, Mr. Baker made an informal talk in which he recommended attention to legislative matters, taxation of nursery stock, maintenance funds for highway improvements and freight rates.

George Verhalen, of the Verhalen Nursery Co., Scottsville, Tex., presented the proposed marketing agreement. He read the document and explained the changes which had been made from the first draft sent to members recently and published in the trade papers. It was decided to postpone consideration of the agreement until a later session.

Highway Improvement.

Mrs. C. B. Whitehead, landscape architect, Fort Worth, spoke on highway improvement and urged the association to demand the use of nursery-grown stock in such projects instead of native material, which plans so far carried out in Texas have called for. Mrs. Whitehead explained that of the federal money appropriated for highways and accepted by a state, one-half of one per cent must be spent for beautification, but as much as a full one per cent can be used for the purpose if the state wishes to do so. So far, about \$80,000 has been spent for highway beautification in the state of Texas, but nurserymen received exceedingly little of this sum because the state highway department landscapers insisted on specifying native material on the projects, and the native material was dug up in the woods. Another \$50,000 will be spent in Texas this fall, and it is possible that as much as \$240,000 will be available for highway planting during the next year.

The subject was taken up again at another session by Mrs. Whitehead and immediate action on the part of nurserymen to secure the specification of nursery-grown stock was urged. A committee was appointed to consider the subject thoroughly and take whatever action is deemed necessary. On this committee are Edward L. Baker, Fort Worth; Lee Mosty, Center Point; George Verhalen, Scottsville; Eugene Howard, Austin; Otto Lang, Dallas; Mrs. C. B. Whitehead, Fort Worth, and Edward Teas, Houston.

Rotary Luncheon.

Thursday noon all visiting nurserymen were invited to attend the luncheon of the Tyler Rotary Club, during which talks were made by J. T. Foote, nurseryman of Durant, Okla., and A. C. Morgan, of The American Nurseryman, Chicago, Ill.

The afternoon session was devoted to an illustrated lecture by R. C. Morrison, city forester of Fort Worth. "Beautification in the New Deal" was the subject of Mr. Morrison, who asserted that an increased interest in all kinds of planting is one result of the new era into which we are entering. Community

plantings will become more numerous and more persons will become interested in garden hobbies. He illustrated his talk with slides showing right and wrong garden designs and scenes of community projects.

Visit Rose Nurseries.

A tour of the rose nurseries in the vicinity of Tyler was an eye-feast prepared for visitors Thursday afternoon. After Mr. Morrison's talk the meeting adjourned and visitors were escorted in automobiles of Tyler nurserymen to eighteen of the famous rose-growing establishments. Traveling southwest of the city first, the cavalcade of automobiles drove by the fields of A. L. Thompson, D. O. Ford, Godfrey's Rose Nursery, P. C. Moore's No. 1 nursery, W. B. McGinney and the Texas Nursery Co.; in and through P. C. Moore's No. 2 nursery; by one of the fields of the Dixie Rose Nursery and the field of H. G. Strayhorn, and then in and through another of the large fields of the Dixie Rose Nursery, where A. F. Watkins had arranged for a demonstration of a large sprayer in use at that establishment.

Circling around the city, the cavalcade went to the northeast section, where were visited the rose fields of Thomas Hudnall, B. L. Ginn, M. L. Baleh, S. P. Ford & Son, B. S. Shamburger, M. S. Shamburger, Basil Larison and J. G. Atwood & Sons; another type of sprayer used in the east Texas rose fields was seen at the Atwood establishment.

The automobile tour ended at Burns park, where a picnic supper had been arranged by the Tyler hosts. Many made use of the swimming pool, and nearly all stayed late for dancing.

Commissioner Speaks.

J. E. McDonald, commissioner of agriculture of the state of Texas, was present at the morning session Friday, June 15, and showed the close relationship between nurserymen and the Texas department of agriculture in a short talk. Mr. McDonald urged nurserymen to seek government financial assistance for farmers for the purpose of establishing orchards and for buying trees, shrubs and other ornamental stock for their farms. He stated that such a project is just as worthy as and probably more so than many of the other emergency projects, including highway improvement and C. W. A. improvements. He asserted that farmers need and want nursery stock, but have no funds with which to buy it; so government loans should be made for that purpose.

A discussion of highway planting was carried on at this session, resulting in the appointment of the committee mentioned previously. The nominating committee, through A. L. Thompson, made its report, and although W. V. Henson nominated Lee Mosty, Center Point, Tex., for president in his stead, Mr. Mosty refused to be considered and an unanimous ballot was cast for the officers mentioned earlier in this report.

Last Session.

The last session of the convention was held Friday afternoon. W. E. Rey, Oklahoma City, Okla., chairman of the committee on resolutions, offered resolutions on the deaths of John Watson, Grimsby, Ont.; O. K. Phillips, Rockdale, Tex., and A. L. Luke, Oklahoma City, and resolutions of thanks for the hospi-

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tality of the East Texas Rose Growers' Coöperative Association and others.

Mrs. Thomas B. Foster gave her report as secretary-treasurer and announced that the convention attendance was about 150. She also reported the sending of a gift of remembrance to Mrs. Carl Shamburger, who was seriously ill in a local hospital. Bids for the convention next year were made for Shreveport, La.; Mineral Wells, San Antonio, Dallas and Galveston, Tex. Mineral Wells was chosen. Miss Wilma Gunter, of Griffing's Nurseries, Beaumont, Tex., was presented with a gift in recognition of her assistance in the work of the association.

Marketing Agreement.

Practically the remainder of the afternoon session was devoted to consideration of the proposed marketing agreement for the southwestern region, which was presented paragraph by paragraph by George Verhalen. J. A. Bostick, Tyler, represented the East Texas Rose Growers' Coöperative Association in urging the change sought by the rose men, while N. D. Woods spoke for the Oklahoma members of the association.

The committee in charge of arrangements for the convention was composed of W. V. Henson, chairman; P. C. Moore, A. L. Thompson, J. A. Bostick, Carl Shamburger and J. G. Atwood, all of Tyler.

Visitors at Tyler.

Among those in attendance from outside the vicinity of Tyler were the following:

Sneed, J. Frank, and wife, Muskogee, Okla.
Simpson, S. C., Monticello, Fla.
Patterson, J. S., Marlin, Tex.
Howard, Eugene, and wife, Austin, Tex.
Mosty, Lee, Center Point, Tex.
Chattin, E. E., Winchester, Tenn.
Lambert, Jr., J. O., Shreveport, La.
Katz, H. B., St. Louis, Mo.
Foote, Jack, Durant, Okla.
Lingner, Gus, San Antonio, Tex.
McKay, Walter T., San Antonio, Tex.
King, J. B., Teneha, Tex.
Cannon, G. E., Mineral Wells, Tex.
Semple, Mack, Richmond, Va.
Edrington, E. T., Houston, Tex.
Aral, S., Genoa, Tex.
Bushway, R. H., Houston, Tex.
Terrick, B. H., and wife, Waco, Tex.
Verhalen, George F., Scottsville, Tex.
Giles, Lige, Farmersville, Tex.
Scott, J. L., Farmersville, Tex.
Morgan, A. C., and wife, Chicago, Ill.
Griffing, W. C., and wife, Beaumont, Tex.
Griffing, Ralph C., Beaumont, Tex.
Gunter, Wilma, Beaumont, Tex.
Gunter, Sibyl, Beaumont, Tex.
Foster, Mrs. T. B., Denton, Tex.
Foster, Claire, Denton, Tex.
Sanders, Mrs. Ida, Center, Tex.
Foote, J. T., Durant, Okla.
Conard, Leo, Stigler, Okla.
Woods, N. D., Oklahoma City, Okla.
Rey, W. E., Oklahoma City, Okla.
Moberly, Dr. W. M., Bentonville, Ark.
Smith, J. V., Shuman, Tex.
Ross, O. K., Henderson, Tex.
Crews, N. G., Waco, Tex.
Thompson, J. M., Waco, Tex.
Mosty, Harvey, Kerrville, Tex.
Morrison, R. C., Winsboro, Tex.
Garre, C. E., and wife, Noble, Okla.
Winkler, P. A., Beaumont, Tex.
Garrett, Lucy Jane, Noble, Okla.
Teas, Edward, and wife, Houston, Tex.
Mayhew, C. C., Sherman, Tex.
Lang, Otto, Dallas, Tex.
Gray, Miss Olive, Fort Worth, Tex.
Whitehead, Mrs. C. B., Fort Worth, Tex.
Jeffers, George M., Crockett, Tex.
Twitty, R. S., Texarkana, Tex.
Mayhew, A. B., and wife, Dallas, Tex.
Henderson, E. M., Athens, Tex.
Scott, R. L., Ardmore, Okla.
Teas, Fred, Houston, Tex.
Teas, Benjamin, Houston, Tex.

SOUTHWESTERN COOPERATIVE.

The Southwestern Nurserymen's Coöperative Association, Inc., held a constitutional meeting at Tyler, Tex., June 13 to 15, during the convention of the

Southwestern Nurserymen's Association. The officers of the coöperative corporation are C. C. Mayhew, Sherman, Tex., president; Leo Mosty, Center Point, Tex., vice-president, and Otto Lang, Dallas, Tex., secretary.

At least two sessions were held each day during the convention, many of them running long past the usual hour for adjournment. The principal business was the consideration of minimum retail prices on all classes of stock for the next season and the adoption of revised by-laws and rules and regulations.

Instead of having two price lists, the association has adopted one list of minimum retail prices from which discounts are allowed according to the class of buyer. Discounts to be allowed are: Sixty per cent to grower members of the association; fifty per cent to non-grower members (those who buy for resale); thirty per cent to dealers, agents and retail nurserymen who are not members of the coöperative association; thirty per cent to institutions. In addition, there are quantity discounts and discounts for cash.

FOR BLUE GARDEN.

Herbaceous Perennials.

Before selecting the possible plants for a blue garden the decision must be made whether choices are to be kept to true blue or all noted in the lists as blue are to be admitted. In the first case the number is small, allowing of but little variety; however, if purplish tints are not excluded, but used in small quantities among the clear blues, a much longer flowering period is obtained.

Polemonium reptans, *Anchusa myosotidiflora*, *Aquilegia caerulea* and *Linum perenne* are the spring starters. Later come delphiniums, *Belladonna* and *chinense*; *Anchusa azurea*, the tall *Dropmore* or *Opal* varieties; *Salvia azurea*; *Ceratostigma plumbaginoides* (*Plumbago Larpente*); the two shrubby clematis, *Davida* and *caerulea*; *Eryngium*, or sea holly; *Phacelia campanularia*, a showy 9-inch plant with bright blue flowers to be grown from seed, and borage, the herb.

In blues touched with purple may be added to the spring flowers of the first list *Mertensia*, pale lilac blue pasque flower, *Anemone Pulsatilla*, and the little known bulb camassia. From the first of June material is plentiful, including *Lupinus polyphyllus* in a variety of tones, deep blue, purple and a dull tone of blue; *Lupinus subcarnosus*, Texas bluebonnet; *Scabiosa caucasica*; Chinese forget-me-not, *Cynoglossum amabile*; all the monkshoods, *aconitum*; the stable blue of *baptisia*; the misty tinge of *campanulas* and *platycodons*, and the veronica family, the best of which is *Veronica longifolia subsessilis*, blooming in August with long feathery spikes of deepest blue.

Tradescantia is a good foliage foil for the blue mistflower, *Eupatorium coelestinum*. The blue vinea as a ground cover has the desired blooms, and the hardy asters, *Climax*, *Edward VII*, *Ed. Beckett* and *Feltham's Blue*, have only a faint lavender tinge.

Flowering Shrubs.

The group of blue-flowering shrubs is extremely limited, and the colors are

far from an unadulterated blue, but the flowering effect is interesting. The blooms come at dull times and the plants are little used, with one or two exceptions. The indigo bush, *Amorpha fruticosa*, grows from six to eight feet high and has purple blue flowers in July. It is suitable for informal shrub plantings, where it will look out for itself. (It was exported from this country to England in 1724.)

Buddleia Veitchiana, the summer lilac, is familiar, and the blue spiraea, *caryopteris*, while often listed under perennials, has a shrubby growth, especially *Caryopteris tangutica* from China. *Vitex macrophylla*, the chaste tree, produces flowers in July and, while called a tree, is a shrub around four or five feet high. *Elsholtzia* blooms in September. The lilac *President Grevy* has double blue blooms, while the shrub althea, or *hibiscus*, comes in a variety having single blue flowers and is one of the best.

ELECTRIC SOIL STERILIZER.

Reproduced on this page is a photograph of an electric soil sterilizer recently made at the Sunnybrook Farms Nursery, Chesterland, O., and put into operation there. With no outside labor, the sterilizer was constructed from the description of one given at a short course at the Ohio State University, Columbus, the device being the origination of I. P. Blauser, of the agricultural engineering department of the university.

Edith C. Ruh, of the Sunnybrook Farms Nursery, reports that after six weeks of constant use of the sterilizer, her firm feels that it is getting efficient soil sterilization at low cost.

The principle used is that of horizontal electrodes, one on the top and the

other on the bottom of a box, connected to the opposite sides of a 230-volt current.

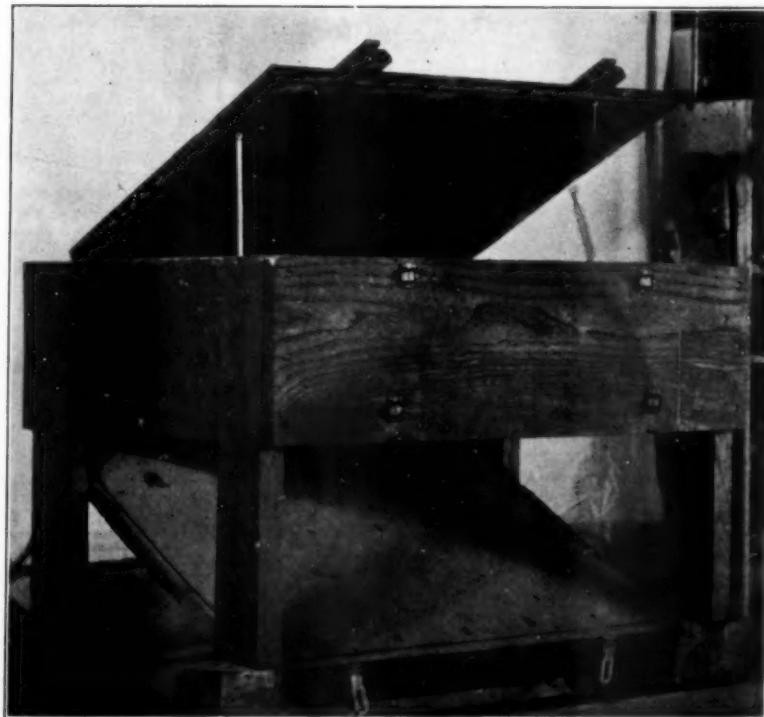
The electricity passing through the soil has apparently little sterilizing effect. The resistance offered by the soil to the passage of the electric current develops heat, the degree and duration of which determine the degree of sterilization. The amount of resistance is influenced by the character of the soil, the moisture content, the soluble salts and the distance between the electrodes and voltage used.

"We have found," says Miss Ruh, "the sterilizer 24x36 inches and ten inches high filled with compost, slightly moistened, requires about five kilowatt hours to heat it to 180 to 210 degrees. This temperature is developed in from sixty to ninety minutes. In order to get more efficient sterilization, we allow this to remain in the closed sterilizer for from three to six hours after the current is turned off."

"At 4 cents per kilowatt hour, a flat 14x22 inches and three inches deep would cost slightly over 2 cents."

LARGEST PERGOLA?

P. L. Keller, nurseryman and chairman of the park commission at Concord, Cal., asks if the pergola recently completed in the Concord city park which is to be covered entirely with *Wisteria multiflora* is the largest in this country. The pergola is described by Mr. Keller as follows: "It is situated in Concord park, an area 300 feet square. The pergola itself, constructed entirely of red cedar logs, is a square 200x200 feet, the total length being 800 linear feet; it is ten feet wide and twelve feet high, except the entrance gates, which are sixteen feet high. The entire cost of materials and labor was \$8,000."



Homemade Electric Soil Sterilizer Used at Ohio Nursery.

American Rose Society

Annual Meeting at Portland

The annual meeting of the American Rose Society was held at Portland, Ore., June 11 to 13, in connection with the Portland rose festival, which this year was more magnificent and on a larger scale than ever before.

The trustees held a meeting on the morning of June 11 at the Portland hotel, Leonard Barron, of New York, acting as chairman. For the first time since they were elected trustees, Forrest L. Hieatt and the Rev. Earl W. Benbow, of Seattle, sat in a meeting. In anticipation of the fact that few of the eastern trustees could be present, a meeting of the eastern group was held at Roanoke, Va., May 30, when routine matters connected with the society's business were dispatched. These actions were approved at the trustees' meeting in Portland.

Immediately after the trustees' meeting, the American Rose Society met for the transaction of its annual business. In the absence of the president and the vice-president, Rev. Earl W. Benbow presided. Committee reports and the treasurer's and secretary's reports were read, showing the society to be in a sound financial condition and improving its membership. The executive actions of the trustees were approved. The two amendments to the constitution, providing for an increase in the number of trustees from nine to twelve and for the formation of a council to act as an advisory body, were unanimously passed.

Officers Elected.

The following officers were elected for 1935: President, Dr. Spencer S. Suliger; vice-president, Leonard Barron; treasurer, S. S. Pennock; secretary, G. A. Stevens; trustees, J. H. Nicolas, Forrest L. Hieatt, Robert Pyle and James C. Clark.

The afternoon session was turned over to the acting chairman of the general Pacific rose conference, Quimby Matthews, of Portland, who introduced E. V. Creed, who welcomed the society and the conference to the city of Portland.

After Mr. Creed's address, Roland Gamwell presented for the resolutions committee a series of resolutions embodying the thanks of the society for its officers' work the past year, the sympathy of the members for President Suliger in the illness which prevented his attendance and appreciation of the Portland Rose Society's excellent arrangements for the meeting.

Interesting Addresses.

Mr. Matthews then introduced Forrest L. Hieatt, who talked on "Some Old Roses of Southern California;" Roland Gamwell, who gave a thorough and interesting discussion on "Rose Understocks for Both Amateur and Commercial Use;" N. B. Coffman, of Chehalis, Wash., who told an inspiring story of the rise of rose interest in Lewis county, Wash., culminating this year in the dedication of a municipal rose garden, a splendid rose show and the visit of delegates of the American Rose Society. Mrs. L. J. Merrill, of Hillsboro, gave a fascinating account of her investigations of the beginnings of rose interest of many of the famous rosarians of the world.

VISIT PORTLAND NURSERIES.

Rose Society Officers' Trip.

Sunday morning, June 10, Leonard Barron and I arrived in Portland and, after brief entertainment at breakfast, were whisked into a whirlwind visit to a few of the near-by nurseries.

Lambert Gardens have one of the finest display gardens for sales purposes we have ever seen. It is laid out in a series of small gardens, using different material to show how it could be used in smaller situations and private grounds. There are a lovely rose garden, a rock garden and various green gardens, flanked with borders of perennials, blooming annuals and shrubs. To the rear of the gardens are spacious beds, which are carefully labeled and from which visitors may select their plants. It is one of the most intelligent and compelling sales efforts that it is possible to imagine.

As a special favor, we were taken to see a bed of *Mecanopsis betonicifolia* (Baileyi).

Rose Specialists.

Then a quick run was made to the nurseries of Peterson & Dering, Inc., at Scappoose, specializing only in roses. The company has twenty-three acres under cultivation, and more than 250,000 plants are being grown for sale this year. We were told that this was the largest number of roses available in the Portland district this year. Here we saw 40,000 blooming plants of the new, patented Mrs. Franklin D. Roosevelt, a gorgeous yellow sport of Talisman, and 30,000 of the new brilliant crimson, Better Times.

The nursery is on rich soil in the valley of the Columbia, and the owners have practically unlimited room for expansion. The field was remarkably uniform and splendid stock for this early in the season, with two months yet to grow.

Messrs. Peterson and Dering are two vigorous and energetic young men, trained from boyhood in the nursery business in this district. They have been in business for ten years and their product is sold wholesale in the eastern markets.

Alpine Collection.

Afterward, Mr. Barron and I paid a visit of love to the alpine collection of Ira N. Gabrielson, of the Oregon Nursery Co. There we saw a remarkable stand of a stunning new hybrid lily, a cross between *Lilium Humboldtii* and *L. pardalinum*. It is a tremendously vigorous plant, with an abundance of nodding scarlet flowers. We were told that the entire stock available for sale this year has already been sold. Several hours were spent among the interesting alpines collected by Mr. Gabrielson, including numerous forms of desert and mountain pentstemon, *eriophyllum*, *erigonomum*, *sphaeralcea* and a host of other items of great interest, many of which were, unfortunately, out of bloom.

A renewal of our friendship with Mr. Gabrielson discloses his deep love of the

alpine flora and his thorough understanding of how it should be handled. He is a rigid selector and refuses to keep in his nursery plants which he does not believe to be of definite value and superior to species now in commerce.

See Many Rose Plants.

Early Tuesday morning, Mr. Barron and myself were taken by Fred Borsch, of William Borsch & Sons, to their nursery of alpine and perennial plants at Maplewood, Ore. We spent a fascinating two hours looking at the endless variety of native and exotic alpine plants which they grow perfectly for retail and wholesale markets. A vast array of gentians occupied many of their shaded frames, and their propagating beds were thronged with primulas, rare sedums, *semperfivium*, brooms, violas, androsaces, dianthus and a host of almost unheard-of plants which are still in the seed frames. The nursery was in excellent condition and is apparently doing a flourishing business in alpines both in this country and abroad. We had a brief conversation with William Borsch himself, a horticulturist of long training and experience. While my knowledge of these things is extremely limited, I venture to say that in variety and rarity, the alpine plants of William Borsch & Sons could not be duplicated in America.

Flower Show.

From Borsch's, we were spirited away to judge the show of the Portland Rose Society and the flower show of the Portland Garden Club in Laurelhurst park. The show was staged in three mammoth tents and numerous auxiliary marquees, an innovation in my experience in American flower shows and not altogether happy because of the heat in the tents.

The rose season in Portland was at least three weeks early this year. In consequence, the roses staged were reported to be of lower quality than usual, but at least two of the judges found nothing to complain about. They were marvelous flowers and exhibited in tremendous profusion. A hurried glimpse into other tents revealed quantities of superb delphiniums both white and blue, plantings of enormous frilled tuberous-rooted begonias and brilliant beds of annuals, poppies and other perennials.

The afternoon was spent in taking a grand tour of the city. Several large and lovely gardens were visited.

Banquet.

In the evening, the American Rose Society banquet was held at the Portland hotel, attended by more than 100 members and friends. A program of speaking was opened by the inimitable Frank Branch Riles, followed by Mrs. Della Bogan, of El Monte, Cal.; Rev. Earl William Benbow, of Seattle; Mrs. Fremont Older, of Cupertino, Cal.; G. A. Stevens, secretary of the American Rose Society, and G. F. Middleton, of Seattle.

June 13, members of the society were taken on a trip up the Columbia river highway and gorge, as guests of the Portland Rose Society. The arrangements for entertainment in Portland were perfect, and the society is greatly indebted to E. V. Creed, president of the Portland Rose Society, for his efforts and unfailing courtesy.

G. A. Stevens.

Drought Intensifies Stock Shortage

**Reports from Nurserymen in Midwestern States
Describe Losses Resulting from Dry Weather This Spring**

FORESEES SERIOUS SHORTAGE.

I have just finished an extensive trip over various growing sections of the country, and it is my observation we are faced with serious shortage of most lines of nursery stock. In some sections of the country there has been serious winter damage, making it necessary to cut some lines of fruit trees and shrubs clear to the ground. There has been considerable drought over most parts of the country, particularly in that part of the country where the bulk of the nursery stock is grown. The stand on spring-planted nursery stock is poor, and if there is any demand at all for nursery stock there will be a very serious shortage.

Prices are going to be considerably higher another year, and in our opinion the early buyer buys at the right time.

H. S. Welsh, Vice-pres.,
Mount Arbor Nurseries.

LOSS IN WISCONSIN.

Business the past spring was exceptionally good. However, the hot, dry weather in May forced us to discontinue digging earlier than usual; nevertheless, our volume of business exceeded that of spring, 1933.

A considerable amount of stock was winterkilled in Wisconsin during the winter. This applies especially to some types of evergreens and the tenderer varieties of deciduous shrubs. There is a considerable loss on stock lined out in nurseries this spring on account of the extremely dry weather.

Salesmen soliciting in the agricultural districts for delivery this fall and next spring are finding sales slow. The crop prospects are poor, and naturally farmers are not buying the usual amount of stock. If there is sufficient rain from now on, I hope that business in the agricultural districts will improve.

W. G. McKay, Pres.,
McKay Nursery Co.

STOCK SURVIVING IN TEXAS.

In some parts of Texas, there have been sufficient rains to keep stock growing normally. In other sections stock is beginning to suffer, but very little is dying. We had plenty of rain during the spring planting season, so that young stock started off well, and most of it is still alive, though suffering.

Many nurseries are overstocked with large evergreens, shade trees and shrubs, which do not need to make much growth. Most of this stock will go through the season without much more rain.

Roses, so far as I have observed, have made good growth and will pull through. We usually have plenty of rain in September and October to cause evergreens and much other stock to put on a fall growth. Roses, too, always make a good fall growth. From the present outlook, stock will be plentiful.

J. B. Baker, Pres.,
Baker Bros. Co.

SEVERE TOLL IN DAKOTAS.

The drought has taken its toll of this spring's planting in many of the nurseries throughout Minnesota and the Dakotas. There have been some severe losses suffered in this spring's lining-out stock in most Minnesota nurseries.

Our own nursery has been rather fortunate in this regard and suffered practically no loss, owing to the irrigation system which we operate here in the Sheyenne valley. Therefore, all our losses have been practically nil, and our young stock is coming along finely.

June 13 I drove with one of the Twin City nurserymen around Minneapolis. Perennials have suffered. The losses on evergreens have been terrible. There is hardly a planting of arbor-vita that has not turned brown. Even Savin and Pfitzer junipers and Mugho pines have suffered badly. In many of these cases, they have already been thrown out. In other cases they are being nursed along and trimmed and an effort is made to save them.

As near as one can size up the situation, arbor-vitas are badly out of favor in the cities of Minnesota. In North Dakota many junipers have lost caste, and only the more hardy ones will be used freely this coming year.

One judgment can be safely made. The spruces, especially the Colorado and Black Hills, are more appreciated than ever before, and the demand for these is going to be greater during the coming year.

E. C. Hilborn, Gen. Mgr.,
Northwest Nursery Co.

INTENSIFIES SHORTAGES.

From all information we can secure, the spring 1934 planting of lining-out stock has suffered quite severely from the drought throughout a wide area, and this undoubtedly will further intensify the shortages that have developed in a great many items during the past season.

Much of the nursery stock that is more than a year old and has been well established is in good condition and has made a fair growth.

If the drought had continued without relief from rain, there would undoubtedly have been considerably more serious damage than has occurred. However, during the past week we have had several good rains scattered throughout the central area, followed by much cooler weather, with the result that both nursery stock and farm crops are looking much better. Corn in this section of the country has made a remarkable growth during the past week.

As regards the drought affecting farm crops, we have not had so much damage as some of the other sections of the west. Most of the corn in this area is still young enough to be greatly benefited by the rains, and if scattered rains follow, we look forward to a fair corn crop, which is the principal farming crop in the central states.

Although sales undoubtedly were af-

fected somewhat by the dry weather, nevertheless our sales at the present time are running considerably ahead of last year. Although, of course, the country as a whole has suffered considerable loss from this drought, nevertheless it has occurred early enough in the season that much of the damage can be repaired if moderate rains occur at intervals, which will be helpful in improving the sales prospects.

In brief, we feel that the shortages that have already occurred in the various lines of nursery stock are sufficient to insure an active demand by the buying public at considerably better prices than were secured this past season. This, of course, depends to a great extent on whether we continue to secure enough rain to produce a fair corn crop, which undoubtedly will sell at a much higher price than would otherwise have prevailed.

The fruit crop over the country is lighter than usual, and indications are that fruit prices will be much better than last year. More normal buying by the general public and a stronger feeling of confidence than last year undoubtedly prevail.

We believe the nurseryman is justified in asking and securing a fair price for his products because there is not a surplus in the country, and we believe that the nursery industry can confidently look forward to a satisfactory and profitable season for the coming year unless something unforeseen should change the entire situation.

Lloyd C. Stark, Vice-pres.,
Stark Bros. Nurseries.

LOSS ON LINING-OUT STOCK.

Although it has been unusually dry and warm during May and the fore part of June here in Missouri, the drought has not been nearly so severe as it has been farther north. We have been favored with a few local showers, which have kept our stand-over stock in fair growing condition.

Our loss has been mostly on cuttings lined out this spring; we figure our stand on the cuttings about twenty-five per cent below normal, and on newly lined root cuttings about fifteen per cent below normal.

We have had about two and one-half inches of rain in the last three or four days, so that we now think we are in good shape for the immediate future, though there is no reserve of subsoil moisture to carry us through any protracted spell of dry weather.

Just what effect the drought is having on sales I am unable to state, though we find our present sales slightly above the same period a year ago.

A. E. Weston, Pres.,
Neosho Nurseries Co.

NATURE seems to have stepped in with crop restrictions that make the efforts of the governmental bureaus of lettered descriptions seem like futile gestures.

Fertilization of Nursery Stock

L. C. Chadwick Recommends Fertilizers for Different Groups of Plants and Tells Availability, Soil Reaction and Cost

Fertilization practices with nursery stock show little standardization throughout nursery areas. This lack of uniformity might be expected, since little investigational work has been conducted to give a basis for specific recommendations. Much fertilizer has been applied to nursery stock without a knowledge of its comparative cost, possible reaction in the soil and its ultimate effect upon the plant. This article, with accompanying charts, has been prepared to give some information concerning these and other perplexing problems of fertilization.

Ideas concerning the proper fertilization of nursery stock vary considerably. This is due, partially at least, to the variations existing in the manner of growing different types of plants. Occasions arise where fertilizers are added for the purpose of forcing growth. With newly transplanted stock that has been heavily pruned this practice may be advisable, but with stock handled properly, little forcing, in the true sense of the word, is desirable.

High Quality Is Object.

A better policy to adopt is to add fertilizers to the extent of maintaining sufficient vigor to produce high-quality stock. High-quality stock will make money for the grower, while poor-quality plants will or should find their way to the brush pile. Fertilization to the extent of forcing rapid growth frequently does not result in the highest quality. A normal uniform rate of growth is the most desirable.

The accompanying charts are presented to give necessary information in a concise form. Some explanation of these is necessary. The fertilizer chart gives the analysis, influence upon soil reaction, availability and cost of sixteen

different fertilizers. The analysis, influence on soil reaction, availability and notes require no elucidation. The cost per ton will, of course, vary in different localities, thereby changing the cost per pound of the essential elements.

Explanation of Cost Figures.

The prices given are those current in Columbus, O. The figures should be referred to as a comparative basis for determining costs and the cheapest material to use. The accompanying figures may be readily changed to fit the individual's scale of prices.

Since both essential elements and complete fertilizers are used in fertilization practices, costs are given per pound for each of the essential elements and for the total available units in the fertilizer.

Normally, fertilizers are purchased for any one or all of the essential elements of nitrogen, phosphorus and potash. The percentages of these materials in the different fertilizers vary greatly. For example, according to the accepted analysis, ammonium sulphate contains twenty per cent nitrogen, and nitrate of soda, fifteen per cent. Thus in a ton of these materials there would be 400 pounds and 300 pounds of nitrogen, respectively. At the given price per ton of these materials, the nurseryman would pay 10 cents per pound for nitrogen, using ammonium sulphate, and 14 cents if he used nitrate of soda. The cost per pound of the other essential elements and the total units is figured likewise.

Elements in Ton of Fertilizer.

Reasoning further, in a commercial brand of fertilizer such as a 4-12-4 there is a total of twenty units ($4\text{N}, 12\text{P}_2\text{O}_5, 4\text{K}_2\text{O}$) or in other words, 400 pounds

of the essential elements are combined in a ton of 4-12-4 fertilizer. Thus, based on the price given, the cost of this fertilizer is 8 cents per pound, considered on the basis of the total units it contains.

It should be apparent from this discussion that the price per ton does not give a clear indication of the real value of the fertilizer. The nurseryman should figure its value on the quantity of the essential element or elements he wishes to apply.

Referring to the chart again, it can be seen that if nitrogen alone is the element desired, its cheapest source is ammonium sulphate. It is apparent how uneconomical it would be to apply 4-12-4 if nitrogen alone were desired. The cost would be approximately four times as much per pound. Yet this frequently happens when the grower buys one fertilizer to satisfy all of his needs or he applies it just because he has it on hand.

Phosphorus Sources.

The cheapest sources of phosphorus are superphosphate and ammonium phosphate. The latter is an especially useful source if both nitrogen and phosphorus are desired. Tests have shown that the phosphorus in ammonium phosphate is more readily available than it is in superphosphate or bone meal. Potassium chloride is a satisfactory source of potash and potassium nitrate where both nitrogen and potash are necessary.

The most profitable complete fertilizer to buy will depend upon its use and the total units it contains. The choice of either cottonseed meal or tankage for ericaceous plants will depend on local prices. At the prices given, tankage would be the logical material to purchase.

FERTILIZER CHART

Analysis, Influence on pH, Availability and Cost of Various Fertilizers

Material	Analysis	Influence on soil reaction	Availability	Approximate cost per ton	Cost per pound of nitrogen (N)	Cost per pound of phosphorus (P_2O_5)	Cost per pound of potash (K_2O)	Total units	Cost per pound of total units	Notes
Ammonium sulphate	20-0-0	Acid	Rapid	\$41.15	\$0.10	....	....	20	\$0.10	Less available in cold and acid soils.
Nitrate of soda...	15-0-0	Alkaline	Rapid	41.50	0.14	....	....	15	0.14	Continued applications may cause toxicity.
Urea...	46-0-0	Little	Rapid	135.00	0.15	....	....	46	0.15	Leaves no residue in soil.
Ammonium phosphate	11-48-0	Little	Fairly rapid	57.30	0.26	\$0.06	....	59	0.05	Phosphorus readily available.
Potassium nitrate...	14-0-45	Slight acid	Rapid	59.70	0.21	....	\$0.07	59	0.05	Good on peat soils where N and K are needed.
Cottonseed meal...	7-3-2*	Acid	Slow	35.00	0.25	0.58	0.88	12	0.15	Good for ericaceous plants.
Tankage...	8-10-0*	Little	Slow	40.00	0.25	0.20	....	18	0.11	Good for ericaceous plants.
Dried blood....	10-3-0*	Little	Slow	52.00	0.26	0.87	....	13	0.20	Penetrates soil slowly.
Super-phosphate	0-20-0**	Relatively slow	23.65	....	0.06	....	....	20	0.06	Penetrates soil very slowly.
Bone meal...	3-22-0*	Alkaline	Very slow	35.70	0.60	0.08	....	25	0.07	Nitrogen readily available.
Potassium chloride...	0-0-50	Slight acid	Relatively rapid	52.00	....	....	0.06	50	0.06	Most active in acid soils.
Potassium sulphate...	0-0-48	Slight acid	Relatively rapid	59.90	....	....	0.06	48	0.06	Most active in acid soils.
Commercial brand...	2-10-10	.....	.....	28.05	0.70	0.14	0.14	22	0.06	Recommended fertilizer brand.
Commercial brand...	2-12-6	.....	.....	29.65	0.74	0.12	0.25	20	0.07	Recommended fertilizer brand.
Commercial brand...	4-12-4	.....	.....	31.35	0.39	0.18	0.39	20	0.08	Recommended fertilizer brand.
Commercial brand...	10-6-4	.....	.....	37.20	0.19	0.31	0.47	20	0.09	Recommended fertilizer brand.

*Approximate analysis.

**16% and 46% superphosphate obtainable.

A word may well be said about bone meal. Growers frequently employ this material to supply phosphorus and to add a small quantity of nitrogen. Based on the figures given, the same quantity of essential elements contained in 100 pounds of bone meal could be obtained from ammonium sulphate and superphosphate for 15 cents less than the cost of the bone meal, and in addition, the elements in ammonium sulphate and superphosphate are more readily available.

A still better source of nitrogen and phosphorus is ammonium phosphate. The cost of enough ammonium phosphate to give the same quantity of essential elements as are contained in 100 pounds of bone meal would be 45 cents less than the cost of the bone meal.

Tables are presented to give the fertilizer recommendation for evergreen, deciduous, bulbous and herbaceous plants of different ages when handled in sandy, silt and clay loam and clay soils. The modifying conditions of manure or

green crops plowed under are considered. Varying individual conditions will necessitate changes in these recommendations, but the tables may be used as a standard from which to work.

Nitrogen, phosphorus, potassium or complete fertilizers may be added as a side-dressing in addition to those recommended or substituted as the individual case demands. The recommendations given should, however, satisfy the plants mentioned under the conditions considered.

FERTILIZERS FOR NURSERY CROPS

1. Evergreens

Age	Soil types and modifying conditions		Notes	
	Manure or green crop plowed under			
	Sandy soils	Silt and clay loams and clays		
Narrow-Leaved Evergreens				
Seed beds Seedlings to stand 1 to 2 years	1-in. mulch of peat moss	1-in. mulch of peat moss	Manure or green crops not recommended for seed beds. Apply mulch as seedlings reach sufficient size. Apply tankage, 25 lbs. per 1000 sq. ft., mid-July if soil is mostly sand.	
Transplant beds Seedlings or cuttings	1-in. mulch of peat moss	1-in. mulch of peat moss	Tankage, 35 lbs. per 1000 sq. ft. 1-in. mulch of peat moss	
Lining-out stock	No fertilizer first yr. 10-6-4, 400 to 500 lbs. per acre second year	No fertilizer first yr. 10-6-4, 300 to 400 lbs. per acre second year	10-6-4, 400 to 500 lbs. per acre	
Field stock	10-6-4, 700 to 750 lbs. per acre	10-6-4, 600 to 700 lbs. per acre	10-6-4, 750 to 800 lbs. per acre	
Broad-leaved Evergreens*				
Ericaceous plants and others requiring an acid soil.				
Transplant beds Seedlings or cuttings	1-in. mulch of peat moss	1-in. mulch of peat moss	Tankage, 35 lbs. per 1000 sq. ft. 1-in. mulch of peat moss	
Lining-out stock	No fertilizer first yr. Cottonseed meal, 1500 lbs. per acre second year	No fertilizer first yr. Cottonseed meal, 1000 lbs. per acre second year	Cottonseed meal, 1500 lbs. per acre	
Field stock	Cottonseed meal, 1500 lbs. per acre	Cottonseed meal, 2000 lbs. per acre	Cottonseed meal, 1500 lbs. per acre	
Other Broad-leaved Evergreens*				
Transplant beds Seedlings or cuttings	1-in. mulch of peat moss	1-in. mulch of peat moss	Tankage, 35 lbs. per 1000 sq. ft. 1-in. mulch of peat moss	
Lining-out stock	No fertilizer first yr. 10-6-4, 400 to 500 lbs. per acre second year	No fertilizer first yr. 10-6-4, 300 to 400 lbs. per acre second year	10-6-4, 400 to 500 lbs. per acre	
Field stock	10-6-4, 600 to 700 lbs. per acre	10-6-4, 500 to 600 lbs. per acre	10-6-4, 700 to 750 lbs. per acre	

2. Deciduous Plants

Stock plants 1st year	4-12-4, 700 to 750 lbs. per acre	4-12-4, 600 to 700 lbs. per acre	10-6-4, 600 to 700 lbs. per acre	10-6-4, 500 to 600 lbs. per acre	Apply at time of preparing soil. Use 4-12-4 and 10-6-4 fertilizers with at least one-half of nitrogen from organic source.
Budded plants 2d year	2-10-10, 600 to 700 lbs. per acre	2-10-10, 500 to 600 lbs. per acre	2-10-10, 700 to 750 lbs. per acre	2-10-10, 600 to 700 lbs. per acre	Apply in early spring and work it well into the soil.

Other Deciduous Shrubs and Trees

Seed beds Seedlings to stand 1 to 2 years	1-in. mulch of peat moss	1-in. mulch of peat moss	1-in. mulch of peat moss	1-in. mulch of peat moss	Manure or green crops not recommended for seed beds unless plowed under 7 to 8 months before seeding. Apply mulch as seedlings reach sufficient size. If soils are very sandy apply tankage, 25 lbs. per 1000 sq. ft. in mid-July.
Transplant beds Seedlings or cuttings	1-in. mulch of peat moss	1-in. mulch of peat moss	1-in. mulch of peat moss. 4-12-4, 20 lbs. per 1000 sq. ft.	1-in. mulch of peat moss. 4-12-4, 15 lbs. per 1000 sq. ft.	Green crops recommended. Apply peat mulch directly after planting. Apply 4-12-4 when beds are prepared.
Lining-out stock	No fertilizer	No fertilizer	4-12-4, 800 to 900 lbs. per acre	4-12-4, 600 to 700 lbs. per acre	Apply fertilizer at time soil is prepared for planting.
Field stock	10-6-4, 750 to 800 lbs. per acre	Ammonium sulphate, 300 to 400 lbs. per acre	10-6-4, 800 to 900 lbs. per acre	Ammonium sulphate, 350 to 450 lbs. per acre	Apply fertilizers in spring and only if plants are making poor growth.

3. Herbaceous and Bulbous Plants—Gladiolus

Plants for corm production	2-12-6, 4 lbs. per 100 ft. of row	2-12-6, 3 lbs. per 100 ft. of row	4-12-4, 700 to 750 lbs. per acre. 2-12-6, 3 lbs. per 100 ft. of row	4-12-4, 600 to 700 lbs. per acre. 2-12-6, 2 lbs. per 100 ft. of row	Apply 4-12-4 when soil is prepared for planting. Apply 2-10-10 as side-dressing when plants are 8 to 10 inches high.
Plants for flower production	4-12-4, 4 lbs. per 100 ft. of row	4-12-4, 3 lbs. per 100 ft. of row	4-12-4, 450 to 500 lbs. per acre. Also 3 lbs. per 100 ft. of row	4-12-4, 400 to 500 lbs. per acre. Also 2 lbs. per 100 ft. of row	Apply first (in plots with no manure or cover crops) when soil is prepared for planting. Also apply as side-dressing when plants are 8 to 10 inches high.

Lilies

Plants for bulb production	2-10-10, 400 to 500 lbs. per acre	2-10-10, 400 to 500 lbs. per acre	4-12-4, 500 to 600 lbs. per acre	4-12-4, 500 to 600 lbs. per acre	Apply fertilizer in row at planting time. A straw mulch over rows is probably desirable.
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Peonies

Field plants	2-10-10, 800 to 900 lbs. per acre	2-10-10, 700 to 800 lbs. per acre	2-10-10, 1000 to 1200 lbs. per acre	2-10-10, 800 to 1000 lbs. per acre	Apply at time of preparing soil for planting and each year thereafter if plants remain in same location.
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Other Herbaceous Perennials

Field plants	4-12-4, 600 to 700 lbs. per acre	4-12-4, 500 to 600 lbs. per acre	4-12-4, 900 to 1000 lbs. per acre	4-12-4, 800 to 900 lbs. per acre	Apply at time of preparing soil for planting and each year thereafter that plants remain in field. For perennials grown for foliage, substitute 10-6-4 for 4-12-4 and apply same quantity.
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*Seed beds omitted, since most seeds of these plants are started in flats in greenhouses or frames. If seeds are sown in outside beds, handled the same as narrow-leaved evergreen seedlings, with the assurance that the soil is acid.

Status of Dutch Elm Disease

Reassuring Factors Described by New Jersey Experiment Station in Survey of Conditions in Infected Areas and Results of Control Efforts

Probably no other plant disease or insect pest imported into the United States has aroused such widespread and deep concern in the public mind as the Dutch elm disease. To estimate the potential danger to the elms, the New Jersey agricultural experiment station has issued a statement of the record to date.

The disease was first recognized in Holland in 1919 and, since that time has spread into Belgium, France, Italy, the Balkan states, Germany, Norway and England. It was imported into the United States sometime prior to 1930, when it was found in Ohio. Importations of elm burls, used for veneer manufacturing purposes, were the probable means of entry, since several importations intercepted in 1933 were infected with the fungus that causes the disease and were likewise found to be infested with the beetles that carry the fungus from tree to tree. At the present time a federal quarantine prevents further importations of elm burls without proper safeguards, and this avenue of entrance has been effectively closed.

Not Like Chestnut Blight.

The Dutch elm disease has often been compared with the chestnut blight and the inference has been that the elms will die as the chestnuts did. The only common factor of these two diseases is that they are both introduced fungous diseases.

The chestnut blight fungus produced its spores on the outside of the bark, where they were blown about by the wind, picked up by birds and squirrels and carried long distances to other chestnuts. The fungus causing the Dutch elm disease produces its spores, as far as is known, only in the tunnels made by the beetle under the bark. They are not wind-borne and cannot be picked up by birds and squirrels. Furthermore, chestnuts existed in practically pure stands along ridges for long distances, a factor favorable to the continuous spread of their diseases. The elms, on the other hand, do not occur in such extensive pure stands and in nature are found largely in valleys along the streams. There seems to be little justification for making such a comparison between these two diseases.

Infection Spotty.

In Holland the dikes have been planted extensively with elms. In 1930 it was apparent that the Dutch elm disease was not killing all the elms as it advanced. Groups of dead or diseased trees were separated by long stretches of healthy ones. Even in Rotterdam, where the disease was first recognized in 1919, there were still live healthy elms in 1931. The same spotty nature of the infection exists in the infected area in New Jersey.

In Europe there are four species of bark beetle capable of spreading the fungus from tree to tree, two of which are by far the most important, being widely distributed. Of these two, one known as *Scolytus scolytus*, or the large European elm bark beetle, is more abundant and more vigorous than the other and in itself may cause serious damage to the elm. This beetle is not known to occur in the United States.

The other beetle, *Scolytus multistriatus*, is considered of secondary importance in Europe as a means of spread. It is less abundant than the larger species, it is less vigorous in its attacks and it is a weaker flier. This smaller beetle has been established in the United States since 1909 and is present in large numbers from Boston south along the Atlantic seaboard to Maryland. This beetle is not known to occur in Ohio, which will explain the fact that the disease has been found on only ten trees since its original discovery there in 1930. The spread of the fungus in the United States has largely been brought about by this small European elm bark beetle.

Life Cycle of Beetles.

The small European elm bark beetles overwinter as small white grubs under the bark of dead or weak limbs and trees. In early summer they emerge as adults and feed on the wood in the crotches of small young twigs of healthy vigorous trees. It is in these feeding wounds that the fungus is deposited and where infection of the tree takes place. The beetles, when mature, deposit eggs in deadwood or weak trees to complete the cycle. Infected trees become favorable breeding grounds for the beetles, which in turn spread the fungus. The cycle is a vicious one once started, and the logical means of breaking the cycle is to find and remove promptly all infected trees and to keep all other trees in a healthy condition free from deadwood and weak limbs, in order to eliminate as far as possible favorable breeding places for the beetle.

With the absence of the larger more vigorous beetle in this country, it is believed that the disease will not spread so rapidly as it has in Europe, even though nothing is done to prevent it.

Chinese Elm Resistant.

All species of elms are susceptible to this disease, but the Chinese elm, *Ulmus pumila*, is highly resistant. The native American elm is one of the most susceptible. The first symptoms of the disease are a yellowing and wilting of the foliage on a single twig or on many twigs, if infection has been general. These symptoms become more general as the fungus advances from the twigs into the branches and limbs, and the leaves soon turn brown. Under the bark of such twigs and branches, brown streaks are present, which can be seen by peeling back the bark or cutting the twig slantwise. However, even with these symptoms one cannot be certain that the Dutch elm disease is causing the trouble, since there are two other less important diseases of the elm which cause almost identical symptoms. These three diseases can be definitely separated only by laboratory diagnosis.

With the exception of a single tree found in Baltimore, Md., and disregarding the Ohio situation, which is not

alarming, let us examine the situation in the metropolitan area of New York. All known infected trees that have been found are within an area of thirty miles' radius, with New York city as its center. In round numbers, 1,400 trees have been discovered within this area, most of which have already been destroyed by burning. This number, while large, represents less than one-half of one per cent of the elms in that area. Even in the center of the infected territory where one municipality has lost close to 100 trees, this loss represents not over two and one-half per cent of the total elms in that municipality. There is certain evidence at hand which indicates that the disease has been present near the center of this area for at least three years. We may assume, therefore, that the natural rate of spread of this disease has been approximately ten miles per year. However, with an increase in the number of infected trees and with a corresponding increase in the number of beetles which may carry the fungus, we might expect this rate to be increased to some extent, provided nothing is done to prevent or check the disease.

An increase in infected beetle population would, without question, increase the severity of the disease within the infected area, but there is some question as to whether such an increase would materially accelerate the rate of spread into new territory.

Effect of Past Winter.

Large numbers of overwintering beetle larvae were killed last winter, because of the extreme cold. This will reduce the number of adults emerging, but there are sufficient numbers left to perpetuate the species. Since each female beetle deposits, as a rule, approximately seventy to eighty eggs, it is safe to assume that the past severe winter will have no lasting effect upon the beetle population.

The question also arises as to the advisability of planting elms. The annual maintenance of an elm, including the necessary pruning, fertilization and spraying for pest control, is no greater than that for other types of shade trees. The disease has never yet been found on nursery-grown elms, and the numbers of beetles feeding on nursery elms have been negligible. One can be almost certain to obtain from nurseries, even within the infected area, healthy planting stock.

Spraying Possibilities.

There is a possibility that the European elm bark beetle can be controlled by thorough spraying at the proper time. Because of their feeding habits in the crotches of young twigs, large numbers of the bark beetles might be killed if a spray residue of lead arsenate were present in these crotches.

In light of these facts and possibilities, there seems to be no justification for the condemnation of the American elm in planting programs. If eradication activities fail to achieve success, we will learn to live with this disease as we have learned to live with other

Show and Sell**THE NURSERY INDUSTRY
—IN CONVENTION**

(Every member of the industry has been invited to attend)

**59th Annual Convention
of the
American Association of
Nurserymen
at the
Hotel New Yorker, New York
July 17, 18 and 19th.**

For perhaps the second time in its history (going strong since 1875) the American Association of Nurserymen has invited all nurserymen, whether members or not, to their 1934 get together, at the Hotel New Yorker, for a rousing, helpful and practical three days. An unusually large attendance is expected.

You of the industries that sell to nurserymen, as well as nurserymen themselves having stock for sale, are informed that trade exhibits have been provided—immediately adjoining the meeting rooms, at prices ranging from \$25 to \$50. This includes uniformly attractive booth, and every convenience of service provided by this modern hotel.

Space is limited; already alert leading firms have offered reservations. You will do well to act promptly. This year of renewal of the forward progress of business is a fine time to renew your contacts, increase your sales, with the leading progressive nurserymen of the entire country, at their national convention.

**Optimistic News from
Secretary Sizemore:**

"To June 1st, we have 51.3% increase in receipts from dues . . . which plainly indicates the better condition of the business of our members."

FLOOR PLANS AND OTHER DETAILS ON REQUEST.

Wire or otherwise reserve spaces immediately.

*Addressing: F. M. Schmidt, % J. H. Schmidt & Son
Millburn, New Jersey*

**[The receipts from sale of trade space will]
be used to defray convention expense]**

introduced plant pests. Learning to live with these pests is, however, an expensive procedure and, consequently, if the disease can be eradicated from the country, even at a large initial expense, it would be the most economical course in the end.

Elms throughout the northeastern section of the country should receive attention, particularly with respect to the elimination of possible breeding grounds for the small European elm bark beetle. Trees should be properly pruned, to remove weak and dead limbs, and insect pests should be controlled. Such measures will automatically bring about a reduction of the number of possible agents of dissemination. If the Dutch elm disease should be introduced into new areas at some later date, its destructiveness should be materially reduced by such practices.

PARASITES SAVE PEACHES.

Partial control of a major insect pest of peaches without cost to the individual fruit grower has followed the introduction of parasites that attack the larvae of the oriental fruit moth as they make their way through the peach twigs, says Dr. D. M. Daniel, entomologist at the New York state experiment station, at Geneva, who has supervised the rearing and distribution of the parasites in western New York for the past few years. Results to date indicate that as the parasite becomes better established this means of controlling the oriental fruit moth will become increasingly effective.

While the use of parasites to combat insect pests has the great advantage of saving the grower the expense and la-

bor of employing insecticides, it does require the attention of trained observers if the operation is to attain any high degree of effectiveness. Dr. Daniel and his associates have perfected methods for rearing and distributing parasites in large numbers in order to effect the control of the oriental fruit moth as rapidly as possible. An account of the success of their efforts to date and of the fruit moth situation in New York is given in station bulletin No. 635 entitled "Biological Control of the Oriental Fruit Moth." A copy of the bulletin may be obtained from the station upon request.

EASTERN FORESTS GAIN AREA.

Since President Roosevelt allocated \$20,000,000 of emergency conservation work funds for the purchase of forest lands as a relief and conservation measure last July 21, the federal government has acquired or is now acquiring through purchase more than 3,000,000 acres for national forests east of the great plains. These purchases bring the total area in government ownership within the national forests in the lake states and the eastern and southern states regions to 10,273,269 acres.

Of this area, 7,796,129 acres have been purchased with the approval of the national forest reservation commission, under the Weeks and Clarke-McNary forest laws. The rest was acquired by exchanges and through withdrawals of lands from the public domain.

The area of land under national forest administration in the lake states January 15 was 3,010,344 acres. In the eastern and southern states the area was 6,885,623 acres. February 21, the

commission approved the purchase of 377,302 additional acres in these regions, to be placed immediately under forest service management.

FIRM NAME CAUSES CITATION.

Leland C. Brown, president and principal stockholder of First National Nurseries, Inc., Rochester, N. Y., has been cited before the federal trade commission on the charge that the use of the word "nurseries" in his advertising is a form of unfair competition in view of the fact that the First National company is not a producer, but is merely a dealer.

The mere use of the word "nurseries" in the corporate name conveys the impression that the concern produces plants, shrubbery and trees, since that is the general understanding of the purchasing public, it is contended. It is alleged additionally that the company described itself to the public as "growers of fruit and ornamental trees and plants" and as "growers and importers of nursery stock."

The commission and the courts have interpreted the federal trade commission act to give the former power to order discontinuance of misrepresentation on the ground that it constitutes unfair competition.

The company was given until June 29 to show cause why the commission should not issue an order requiring the company to discontinue the use of the word "nurseries" and all representations that it is a producer. G. H. M.

THE Pilz Nursery Market has been opened at 3460 Biddle avenue, Wyandotte, Mich.

Shrubs That Thrive in Dry Soil

Descriptions of Some of the More Common Shrubs for Dry Places Will Interest Planters in Areas Affected by Current Drought

Where drought conditions prevail, home planters will have a particular interest this season in materials that thrive in dry locations. Some of the shrub species that meet this requirement are described here.

Although many of them are classed among the ordinary species and cannot compete with other forms for beauty, they provide distinctly valuable landscaping material in the proper situations, and knowledge of them will serve planters well. In general, they are large plants. Improved forms having the advantages but not the disadvantages of the originals in some of these groups are appearing slowly and undoubtedly will eventually become important additions to commercial plant lists.

Viburnum Lantana.

An upright tree-like shrub that withstands dry hot weather well is Viburnum Lantana. Attaining a height of twenty feet, this variety has stout branches, symmetrical growth and foliage to the ground. The leaves are rough, dark grayish green and have a heart-shaped base.

White flowers are produced in flat-topped clusters in June and July, followed by red fruit that ripens to black. Birds are attracted by the berries, which do not disappear until about September 1. In autumn the leaves turn red. Limestone soils are preferred for the shrub.

V. Lantana is readily propagated from seeds. The recommended procedure with viburnums is to sow them as soon as ripe in seed beds or flats, where they should have a warm temperature for about two months. They can be kept cool over the winter, being mulched in a frame bed or kept in flats in a storage cellar or frames. Exposed in early spring, the seedlings begin to develop at once. Hardwood cuttings are also used for propagating this variety.

Caragana.

Caragana arborescens, the Siberian pea shrub, has a distinct suitability for sandy soil and a sunny location. For many uses the shrub, which grows twelve to fifteen feet high, is too upright and stiff, with the added disadvantage of tending to grow bare at the base with age. The remedy for the latter condition is to prune vigorously every few years, cutting out the old wood and shortening the straggling branches.

The flowers are bright yellow and pea-like, being borne singly in June. In winter the branches are interesting for the green twigs. Recommendation has been made to use the shrubs in shelter plantations in the northwest, where extreme hardiness is essential.

Ceanothus.

Adapted to dry sandy sunny locations is Ceanothus americanus. Although the growth is somewhat weedy, the plant grows compactly and is attractive when in flower. Normally two to three feet in height, this ceanothus occasionally reaches four feet.

The tiny white flowers are borne freely in dense clusters at the end of the branches during June to October. The leaves are oval and pointed, irregularly toothed. In September, a 3-celled capsule is ripened and is shed to leave a silver-lined cup.

C. ovatus is widely found over the dry central plains, and for dry banks and wild gardens has a distinct value. It should be planted in masses, when the effect of the flowers, which are similar to those of *C. americanus*, is enhanced. This variety, too, is hardy.

There are numerous hybrids of *C. americanus*, most of which are not hardy and, even if protected, they are killed to the ground in the north, but the young shoots usually flower the same season. Many of these profusely blooming hybrids are worth lifting in the fall and storing until the spring.

Difficulty in transplanting, because of a rambling root system, is said to be the cause for less frequent listing of *Ceanothus*. This drawback is not so great with young plants, however. An annual spring pruning should be given, as flowering occurs on the current season's wood. The soil should be rich though dry.

Vaccinium.

The common high bush blueberry, *Vaccinium corymbosum*, is now to be found in many nurserymen's lists. Difficulty in propagating and transplanting it has hindered its acceptance as a cultivated ornamental, but its bright scarlet and crimson foliage, that rivals the sumac in late autumn, makes it a desirable garden plant. When well grown, it is a stout thick spreading bush, eight to ten feet high, and bears attractive fruit.

V. stamineum drops its foliage early, but is attractive when in bloom and throughout the summer because of its graceful habit. It is recommended for sterile sandy or gravelly situations and is one of the few ornamental shrubs suited for densely shaded locations. It has the peculiarity of never forming a true flower bud, the flower being open from the first.

V. Vitis-idea and *V. uliginosum*, both having shining box-like foliage, provide effective edging for shrubbery borders.

Peaty or sandy acid soil are required by *Vacciniums* if they are to thrive, rich soils not being acceptable. As a rule, they are quite sensitive to lime.

Acanthopanax Pentaphyllum.

The fiveleaf aralia, *Acanthopanax pentaphyllum*, provides a 4 to 6-foot shrub with slender arching branches that is not only drought-resistant, but tolerant of dust and smoke. It is therefore one of the desirable species for cities, where it will maintain a fresh green appearance when other shrubs look shabby.

It has the further advantage of being able to withstand shade, and it is not subject to insect attacks. Used on rocky slopes, it can also be employed for upright hedges. While it is not par-

ticular about the soil, it develops excellently in a rich heavy medium. It is hardy as far north as Massachusetts.

The branches of this *Acanthopanax* are spiny, with several prickles beneath each leaf. The foliage is dark and shiny, each leaf being divided into five to seven leaflets. Small terminal panicles of white flowers are produced, but fruiting seldom follows, as only the pistillate forms are believed to be in cultivation.

To keep the plant upright, severe pruning in the spring must be practiced. Branches that naturally become drooping as the plant ages can also be cut out, if it is desired.

For propagation, root cuttings are readily handled, bottom heat being used. Pieces two to four inches long can be buried in sandy soil in flats in late winter. Hardwood cuttings can be employed in September or October, but softwood cuttings taken from forced plants in late winter, early spring or summer are preferred. Suckers offer still another means.

Lycium Chinense.

Of the lyciums, known widely as matrimony vines, the variety chinense is desirable for soil that is not too moist and stony banks. This is a vigorous-growing rambling shrub with slender arching branches on which purplish funnel-form flowers are followed by a profusion of scarlet berries in the fall. These berries contrast well with the green foliage that is retained unchanged until after a severe frost. Because of suckering, it is not advisable to plant lyciums near flower gardens.

Prunus Pumila.

For sandy and windy locations, the sand cherry, *Prunus pumila*, deserves attention. Decumbent when old, this cherry has erect young branches that often reach five to eight feet. Its slender twiggy growth is reddish and smooth. The characteristic white cherry blossoms are followed by purplish black fruit. Susceptibility to twig blight tends to make the shrub somewhat unpopular.

P. Besseyi, closely related to the foregoing, but distinguished by more prostrate growth and spreading leaves, grows about three feet tall and is especially useful in the front of the shrub border. Its white flowers and black fruit are produced abundantly, and the dark glossy leaves are attractive. This is the original of the improved Rocky mountain cherry and the source of many valuable hybrids.

Rhus Glabra.

In the driest most barren soil, *Rhus glabra*, the smooth sumac, does well. This shrub, which grows up to fifteen feet, presents splendid autumn coloring, its scarlet fruit display in a dense panicle up to ten inches long being remarkable. At the top of steep banks and in arid sterile places the coloring is said to be best developed. There is little color change in low soil. Cutting

REACH ALL A. A. N. MEMBERS
(and several thousand other nurserymen)

IN THE CONVENTION NUMBER OF THE
AMERICAN NURSERYMAN

The biggest issue of the year—and the most widely and thoroughly read—will be the July mid-month issue of *The American Nurseryman*, which will contain a complete report of the convention of the American Association of Nurserymen, at New York. That event, according to Secretary Sizemore, will be the best attended in several years, and the preparations indicate an event unparalleled in trade interest for some time.

SEEK STOCK

The demand for stock this spring, the consequent shortages, the damage by drought to lining-out stock and the prospect of better buying ahead are sending the buyers to seek sources of new supplies. Tell them what you have—the Convention Number will be read now and kept for reference later. An advertisement in that issue will do double work for you. Regular rates apply.

JULY 1 ISSUE

Will reach the trade before the convention.
 Valuable for pre-convention announcements.
 To contain report of convention and show of
 American Peony Society, at St. Paul.
 Forms close June 26.

BUY EQUIPMENT

The best selling season for several years, the spring of 1934 has enabled nurserymen to turn stock into cash. Funds are available to buy equipment and supplies to replace the toll taken the past few seasons. Now is the time to reach the trade—here is the quickest and cheapest means to do so.

Mail copy to reach the publisher by July 10.

AMERICAN NURSERYMAN
 508 S. Dearborn Street
 CHICAGO, ILL.

the shrubs to the ground each year makes for denser growth, though both heavier fruiting and more beautiful shape result if pruning is withheld. The winter effect of the species is not good.

R. lacinata is a cut-leaved form of the foregoing that is handsome, but not so hardy. It is shorter growing.

R. copallina, the shining sumac, also succeeds in a dry soil. Its lustrous dark green foliage that changes to reddish purple in the autumn, as well as the crimson fruit clusters, makes this a highly ornamental shrub. Its occasional growth to thirty feet places it in the small tree classification.

Tamarix.

Two members of the tamarix family are to be classed among the drought-resistant shrubs or small trees. These are *T. parviflora* and *T. glabra*. Both are slender and willowy, growing from six to fifteen feet, and have feathery green foliage. In the dry central states the shrubs are used for windbreaks, borders and hedges. They are believed to be a little less hardy in clay than in sandy soil. Shearing does not harm them.

T. parviflora grows about fifteen feet high, with reddish brown bark and spreading branches. The small pink

flowers are borne in large loose terminal panicles or lateral racemes, followed by small capsular fruit. *T. elegans* is a garden form of *T. gallica*, being of slenderer habit and having brighter green foliage. It blooms somewhat later than the original.

Shepherdia Canadensis.

Shepherdia canadensis is a hardy plant that will withstand extremes of heat and drought, being particularly well adapted for dry sterile banks. The growth is three to seven feet, the spreading brown scaly branches showing elliptical leaves that are green above and silvery brown beneath. Yellowish flowers on the branches are followed by oval yellowish red insipid fruit. Plant *shepherdia* in clumps, making sure that both male and female plants are included.

NEW STRAWBERRIES SHOWN.

Three new varieties of strawberries never before fruited in Connecticut and 400 hybrids with pedigrees were the outstanding features of the strawberry field day at the Connecticut agricultural experiment station farm, at Mount Carmel, June 16.

The new varieties of strawberries are Dorsett, Fairfax and Catskill. They

have proved their value in other sections of the country. The test rows at Mount Carmel gave growers an opportunity to judge their adaptability to Connecticut climate, soil and markets.

The 400 hybrid berries are the promising results of an experiment started about ten years ago by Donald F. Jones, head of the genetics department at the experiment station at New Haven. At that time Dr. Jones decided to apply to strawberries the principles he had used so successfully in developing new strains of corn. Selecting five berries of recognized quality—Chesapeake, Howard 17, Progressive, Glen Mary and Marshall—he inbred and crossed these varieties in many combinations. The resulting 10,000 seedlings were set out at Mount Carmel for testing. Each year weak plants or those that showed no fine characteristics were weeded out. Of the remaining 400, many show extraordinary promise. About forty kinds will be chosen for further propagation.

STATE TO GROW BLACK LOCUST.

Director of Conservation C. F. Thompson announced June 10 the state of Illinois purchased an 80-acre nursery east of Havana to be used in producing black locust trees for soil erosion work in Illinois. The price was \$50 an acre.

Plantings at World's Fair

Detailed Description of Individual Firm's Work

KRIDER EXHIBITS AT FAIR.

Varied Plantings by Nursery Firm.

Offering a diversity of effects, yet well unified in layout, the large planting of Krider Nurseries, Inc., Middlebury, Ind., is one of the main features of the gardens of the Horticultural building at Chicago's 1934 world's fair. The project occupies a space 125x225 feet along the lake shore and contains ten sections, each different in type.

The design has as a purpose the creation of various illusions, which, according to Vernon H. Krider, president of the nursery firm, are intended to suggest particular localities, either through the style of layout or the use of plants characteristic to the region. A. J. Vocke, landscaper, of Tippecanoe City, O., helped plan the gardens.

At the front and to the left of the main entrance to the gardens is the planting intended to arouse thoughts of Ireland, exhibiting a pool at the base of a slope on which plants having an emerald green cast are featured. Included are Irish junipers, Cotoneaster horizontalis, *Taxus cuspidata* and *Azalea mollis*.

Mushroom Tea House.

A mushroom tea house is also an interesting feature at the entrance. The shelter is a large-scale reproduction of a mushroom, ten feet across, made of concrete on a wire frame, with realistic ribbings of leather on the underside of the top. A table and chairs are in similar style.

Rising at the center of the left-hand section is a hillside, with plants characteristic of the central states. Trees, shrubs and perennials are mingled. The northern face of this slope portrays plants found widely in the Alleghany region—scores of rhododendrons. A waterfall at the top and a mill wheel

The gardens and other exhibits planted by nurserymen at the 1934 world's fair at Chicago are of such extent and interest as to merit more than the brief mention which has appeared in the general articles in previous issues of this magazine. So it is planned to present in each issue a fuller account of each nurseryman's work. One of these important horticultural features of the fair is described on this page.

at the bottom of the slope are also attractive features.

A section of fence, using rails about 150 years old from the nursery, and a stone wall are interesting parts of the New England scene. Here, too, is a garden window, with branches of trees framing a lake vista.

West Coast Effects.

Representing the west coast, where, the identifying legend reads, "the bizarre and beautiful meet," is a stretch of green turf, backed with shrubbery, facing a wall fountain. The suggestion of a totem pole, with a bird house atop, is used to cast a shade on a sundial having figures made with plants. There is also a vertical sundial on a wall that is unique.

The German section, suggesting strength and dignity, has a row of the phloxes bearing Teutonic names on either side of a short path leading to a bench emblazoned with the rising sun of the new German nation. From this section one must cross a bridge over a canal to reach another group of plantings, shown in the accompanying illustration.

At the back in this group is a



Part of Large Planting by Krider Nurseries, Inc., at 1934 World's Fair.

thatched summerhouse, flanked with beehives, that faces the English garden, which has four corner plantings and a child's statue at the intersection of the two paths. On a terrace below is a French garden, with phloxes having French names in two beds that extend along either side of a path that has a fountain at the midpoint. Evergreen accents mark both the foregoing sections.

Dutch Representation.

A canal and windmill are conspicuous in the Dutch planting. The mill, erected at the nursery and brought to the fair by truck, is an authentic full-size reproduction, with moving vanes. At its base, on a brick-faced terrace, is a neat little planting of grafted evergreens which is characteristic of Dutch homes, Mr. Krider states.

The way out of the planting is along a southern garden, that contains a truck load of plants brought from Meridian, Miss., to Chicago in two days and a night. Seen here are nandinas, palms, wax-leaved privets, *Cedrus atlantica glauca*, *Cedrus Deodara* and magnolias. Lichens hang on tree branches to frame the view lakeward.

The gardens represent the work of eight men, assisted by concession workers, for about six weeks. Sixty-eight truck loads of stock and soil were used, twenty-three of these being of plants. One load consisted of rhododendrons alone—300 plants, balled and burlapped. Much preparatory work had to be done at the nursery, in addition.

Arrange Dioramas, Also.

The firm is also responsible for two elaborate dioramas in the Horticultural building. One of these represents a mountain setting, with rocky ledges and waterfalls, in which appear *Azalea mollis*, spruces, pines, *yucca*, sedums and rhododendrons. "Picturesque Japan" is the name given the other scene, with steep slopes against a painted backdrop. Materials used in it include red-leaved Japanese maples, *Daphne Cneorum*, Japanese biotas, *Taxus cuspidata*, *capitata* and *brevifolia*; creeping junipers and *Retinispora plumosa* and *piscifera*.

Krider Nurseries, Inc., occupying about 420 acres, does a retail and wholesale trade in general nursery stock. It has been in operation about thirty-eight years and was incorporated in 1922. Kenneth Krider, a son, is secretary of the firm.

MORE FAIR PLANTING DATA.

Additions to the list given last week of firms doing landscape work or supplying stock for use in plantings at A Century of Progress in Chicago follow:

Vaughan's Nursery, Western Springs, Ill., furnished considerable material for landscapers. The stock included about 12,000 privet, 600 evergreens of various types, 100 *Rosa rugosa*, used in the Streets of Shanghai, and perennials for the Alpine Garden. Besides the foregoing, plants and trees were furnished for the firm's large garden on the Horticultural building grounds.

Clauss Bros., Chicago, who had a large number of contracts for work last year, both with fair officials and exhibitors, repeated this year with a long list of plantings. Concessions with which the firm had contracts this season include the Streets of Shanghai,

Swiss Village, Haeger Pottery building, Firestone building, Johns-Manville building, Mexican Village, Old Heidelberg, Belgian Village and Tunisia.

The firm also participated in the work of landscaping the General Motors building grounds and the grounds of the Administration building, the Illinois Host building and the Travel and Transport building. The Alpine Garden installed last year by the firm was also replanted. A large quantity of sod was supplied for the fairgrounds, as was done in 1933.

Large poplars, cedars and weeping willows were among the trees planted. For the Mexican Village, a quantity of material was imported from Mexico. This concession took seven cedar trees, varying from seven to nine feet; three pines, a banana tree and many large potted plants.

Planting was begun by the firm six weeks before the opening of the fair and about eighty men were employed on the work at one time. Several thousand dollars are represented by the stock furnished. Folders describing the plantings of last year are being distributed to the public at the Alpine Garden and Firestone building this season.

The Tunistra Landscape Co., Chicago, besides installing a rock garden and cascade at the Horticultural building, did most of the planting at the Dutch Village. It also supplied the stock for the Missouri state exhibit.

MARKERS MEET TEST AT FAIR.

Perfection nursery markers, the products of the S-W Supply Co., Girard, Kan., are being used for the second season by the Interstate Nurseries, Hamburg, Ia., in their extensive rose garden on the Horticultural building grounds at Chicago's 1934 world's fair. These markers greatly enhance the educational value of the planting for the visitors, being easily read. They were selected for exclusive use this year because of their completely satisfactory service in the garden during the 1933 exhibition.

FOREST PLANTINGS TREBLED.

Tree planting in the national forests was nearly trebled last year, the United States forest service reports. And the plantings for the calendar year, aggregating 69,215 acres, were well over three times the annual average for the five preceding years.

The regular forces of the forest service planted 13,236 acres. Civilian Conservation Corps plantings amounted to 45,843 acres, and N. R. A. planting crews accounted for 10,136. Forest service crews operated in six of the forest regions. Ninety per cent of the C. C. C. plantings were in the lake states region.

Most of the trees were grown in forest service nurseries, but it was necessary also to make large purchases of planting stock from private nurseries to meet last year's requirements. The forest service expects to have enough trees available in its own nurseries to carry out an equally large program this year. Since the passage of the Knutson-Vandenberg act in 1930, authorizing additional funds for planting on the national forests, the federal nurseries have been expanded considerably. The entire program for field planting this year, however, will be dependent upon emergency funds, as there is no money available for this purpose from the regular appropriation.

"PAINESVILLE NURSERIES"



A Complete Line of General Nursery Stock

in all departments
growing on for fall sales

For immediate delivery, a full line of Evergreen Trees and a splendid list and lot of 2-inch Potted Annuals and Miscellaneous Summer Bedding Stock.

The Storrs & Harrison Company PAINESVILLE, OHIO

POLLINIZING FRUIT TREES.

Fruit growers, both professional and amateur, have come to appreciate the importance of taking into consideration the pollen relationships of varieties when selecting trees for new plantings, for scientists have shown that practically all fruits benefit from pollination by other sorts. In fact, many apples, sweet cherries, pears and plums require cross-pollination to set any fruit at all.

Knowledge as to which varieties of each of the different tree fruits will make the best combination in the orchard would be helpful in setting out new plantings or in top-working old orchards. To supply this information, the fruit specialists at the New York state experiment station, at Geneva, have prepared a circular on "Pollination of Fruit Trees." A copy of this circular may be obtained upon request to the station.

Among the apples, such popular varieties as Baldwin, Rhode Island Greening, Tompkins King and Gravenstein have proved to be poor pollinators, and when they are present in the orchard it is recommended to set at least three varieties. In such cases, two rows of each kind might be set, or every third tree in every third row

might be set with the pollinator. Among the good pollinators might be mentioned McIntosh, Rome, Cortland and, for late bloomers, Northern Spy.

Most pears will not set fruit to their own pollen, it is said, and in tests made at Geneva it was found that Seckel and Bartlett would not pollinate each other, although serving as excellent pollinators for other pears. Beurre Bosc and Angouleme are recommended as pollinators for Bartlett and Seckel. Similar information is given in the circular on cherries, plums, peaches and nectarines.

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On the Calendar

CURRENT EVENTS.

Members of the Nurserymen's National Planning Committee, together with one representative from each of the six regional executive committees, will meet with officials of the Agricultural Adjustment Administration at Washington, D. C., on June 18 to go over the work already done by the committee and to make an effort to develop further the marketing agreement so that it will be adequate for the purpose of the agricultural act.

The thirty-first annual exhibition of the American Peony Society will be held at the Auditorium, St. Paul, Minn., June 21 and 22. The annual convention of the society will be held on the evening of June 21 at the St. Paul hotel, which will be society headquarters during the exhibition.

The thirty-second annual convention of the Pacific Coast Association of Nurserymen will be held at the Hotel Benjamin Franklin, Seattle, Wash., June 26 and 27. A program full of material for discussion will be set before the members, according to the announcement of Howard E. Andrews, Seattle, acting president, and C. A. Tonneson, Burton, Wash., executive secretary.

MICHIGAN SUMMER MEETING.

The Michigan Nurserymen's Association will hold its summer meeting June 28 and 29, at the Whitecomb hotel, St. Joseph.

Harry E. Malter, Monroe, is president, and J. P. Goodhue, 708 East Front street, Monroe, is secretary and treasurer.

MARYLAND SUMMER MEETING.

At a meeting of the executive committee of the Maryland Nurserymen's Association at the office of Jesse P. King, Ridgeville, it was decided to hold the summer meeting at that place June 21. Mr. King kindly offered to be host and a luncheon will be served at 1 p. m. A Rototiller demonstration will be given by Mr. Chisolm at 12 o'clock and the meeting will be called to order promptly at 2 p. m.

Among the subjects to be considered are the appointment of a committee to protest to the governor on the methods of distribution of trees from the state forestry nursery; a committee to coöperate with the state entomologist and pathologist in framing new laws governing the handling and shipping of nursery stock into the state; plans for the 1935 flower show to be held in Baltimore; a discussion on nursery-grown native plants vs. collected material in connection with the aims of national wild flower conservation organizations, and other subjects of vital interest to the nurserymen of the state.

SHADE TREE CONFERENCE.

The tenth national shade tree conference will be held August 29 to 31 at the Carnegie Institute, Pittsburgh, Pa. In connection with this meeting, the National Arborists' Association will meet at 2 p. m. August 29, and the American Society of Arborists will convene at 8 p. m. the same day. The Tree

Experts' Association of Western Pennsylvania and New York State will also hold its annual meeting during the conference.

The committee in charge is assembling a comprehensive group of educational exhibits on insects and diseases, including the Dutch elm disease. Time is provided on the program for the demonstration of various types of equipment and materials. Anyone wishing to demonstrate equipment at this conference should communicate with R. M. Weakley, chairman.

The program, which is virtually completed, will include addresses as follows: "Fungi," by Dr. H. G. Beattie, of the New York agricultural experiment station, Geneva; "The Dutch Elm Disease," by Curtis May, of the Ohio agricultural experiment station, Wooster, and Mr. Liming; "Slime Flux," by E. F. Guba, of the Massachusetts agricultural experiment station, Waltham; "The Elm Disease in Illinois," by Dr. L. R. Tehon, of the Illinois State Natural History Survey, Champaign; "Mycorrhiza," by Dr. Doak, of the Pennsylvania State College, State College, Pa., and "Fertilizers," by Donald Wyman, of the New York agricultural experiment station, and August P. Beilmann, of the staff of the Missouri Botanical Garden, St. Louis, Mo.

MINNESOTA IRIS SHOW.

The Minnesota Peony and Iris Society held its annual iris show at Donaldson's department store, Minneapolis, Tuesday and Wednesday, June 5 and 6.

Show arrangements looked like pretty much of a gamble on the weather, for all indications pointed to a good show on the one hand or as good as none on the other. As matters turned out, the exhibition was not the largest by any means, yet all things considered, it was surprisingly good.

A large number of classes had been arranged in the various groups, and with but one or two exceptions, entries were made in each. In the open group, usually confined to commercial growers, the Riverview Gardens, St. Paul, had a great many awards. A good lot of irises filling four tables came from the Schreiner Iris Gardens, St. Paul. It was not entered for competition, but the superb quality of the display made

it an outstanding exhibit in the show.

For a collection of not over fifty varieties, one stalk of each, the Riverview Gardens received first prize. For irises not bearded, six varieties self-colored, six varieties bicolor and a collection of six varieties blended colors, the Riverview firm received first in each class. A few of the best varieties in the foregoing classes which contributed to the firm's successes were Sensation, a large lavender; Asia, Desert Dawn, Klamath, a large purple, and Legend, a large flower of crimson claret.

Schreiner's, St. Paul, exhibited many outstanding varieties. The best of the old and a number of the newer varieties were staged in this firm's display, including Paulette, a large light or blue lavender; Klamath, violet and purple; Endymion, and Gold Imperial. St. Denis, with its dark purple falls, attracted a great deal of attention. Numa Roumestan, a deep-toned red, was also good.

Coming back to the competitive classes, Riverview Gardens again took the blue for an effective floor basket. Emperor, Ferry's Blue and Kermesina were the larger varieties of irises; Prairie Gold, Pink O'Pal and Snow White were some of the beardless types in the arrangement, which also included a few peonies, such as Redbird, Souvenir de Louis Bigot and Kelway's Glorious.

A tastefully arranged vase of Iceland poppies, not for competition, was set up by Helen Fischer, Minneapolis. Miss Greaves, St. Paul, won the blue for a bowl of fine pansies.

Riverview Gardens again won the blue for a collection of peonies. Among the best in this display were La Lorraine, August Dessert, Souvenir de Louis Bigot, Karl Rosenfield, Clara Dubois and Reine Hortense. These varieties were standing up as well at the end of the show as they did on the first day. Lora Dexheimer and Sarah Bernhardt were good.

The show, as already mentioned, was not up to the usual standard, but was more than commendable, considering the disastrous winter and fierce weather experienced for several weeks past. The heat wave has been broken in the last few days by lower temperatures and scattered rains.

One vase of roses was staged at the iris show which caused a great deal of comment. This was a vase of Austrian Copper exhibited by Mrs. H. B. Tillotson, Eureka, Minnetonka. This exhibitor won several prizes, including

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one for a bowl of garden flowers, irises predominating. Miss Greaves and Mrs. Taylor, St. Paul, were also among the prize-winners in the flower arrangement classes.

The recent rains have made everyone feel more hopeful as regards outdoor crops. In a few commercial gardens the rain penetrated to a depth of over one foot. The gladioli are much improved, peonies are looking better and it is possible the peony show will be much finer than appeared possible a week ago.

ADOPT WASHINGTON CODE.

After a heated discussion, forty nurserymen at Spokane, Wash., May 25 voted to put the marketing agreement on nurserymen's prices in effect the next day. The agreement was adopted at Seattle in April, with only one Spokane grower in attendance.

Fred Coldwell was elected chairman of the new commodity price committee and Fred Beck, secretary.

E. C. Balzer, H. E. Krause and Frank Janish urged the immediate enforcement of the Seattle code of prices, which through the new marketing act is effective for the whole state.

A. A. Kelly cautioned care in action and consideration for the public. Fred Coldwell thought the time was inopportune for the rise in prices.

Walter Peters, Frank Janish and H. E. Krause were appointed a committee to notify the growers. Mr. Peters said he could not serve.

Walter J. Robinson, state director of agriculture, addressed the meeting before the action as to prices was taken. He said that the new nurserymen's price code governed for the whole state, but that Spokane growers, if they so desired, could get a schedule for the Spokane area. He said the state was willing to do anything to help nurserymen stabilize the market.

MORE PLANTS PATENTED.

As reported by Rummel, Rummel & Woodworth, Chicago patent lawyers, the following plant patents were issued recently:

93. Gardenia plant. Walter E. Lenk, Belmont, Mass. Filed February 15, 1932, serial No. 593,188. One claim. A variety of gardenia plant characterized particularly by its large bright green leaves, its exceptionally large and perfect flowers of pure white color, its vigorous growth habits and maximum production of winter blossoms and its resistance to plant diseases.

94. Cherry. Menno Gerber, Orrville, O. Filed June 29, 1932, serial No. 620,053. One claim.

A cherry tree and fruit, said tree bearing its fruit when and after all other varieties have finished bearing.

96. Rose. Josephine D. Brownell, Little Compton, R. I. Filed May 19, 1932, Serial No. 671,871. One claim. A hardy climbing rose plant characterized by its remontant and everblooming habit, stiff long stems and limited number of blooms per blooming stem, the flower having large size and intense fragrance, being substantially a self flower, with petals of a unique golden orange color, but variable in different specimens to orange scarlet or orange carmine, to copper to chamois or to cadmium orange, often overlaid with golden yellow.

97. Rose. Warwick G. Bate, Newton Falls, O. Filed January 28, 1933. Serial No. 653,949. One claim. A rose plant such that propagated from a sport of the Francis Scott Key rose, the plant bears a flower having forty-five petals of a deep red color, the individual petals of outer rows being characterized by substantially straight outwardly curled edges which taper at an acute angle to the tip of the petal when the flower has opened, said plant when grown under glass in the winter season producing a flower which opens freely and uniformly without balling or bluing.

PARLEY GLOVER, Midvale, Utah, nurseryman, addressed the Provo Garden Club, Provo, Utah, recently. The topic of his speech was "How to Plant Evergreens Suitable to Utah's Climate."

OBITUARY.

E. M. Sherman.

E. M. Sherman, a pioneer nurseryman of Iowa, died at his home at Charles City, Ia., June 9 at the age of 72. The funeral was held Monday, June 11.

Mr. Sherman, who came to Charles City from Frederickburg, Ia., started the Sherman Nurseries in a small way and developed the business into a nursery that has become nationally known. It covers over 800 acres, on which have been grown some of the finest evergreens, fruit trees, ornamental shrubs and hardy roses in the United States. Along with the nursery, a large range of greenhouses was used to grow roses, which found a ready market throughout the florists' industry.

John A. Charlton.

John A. Charlton, nurseryman of Rochester, N. Y., died at his home there May 31.

Born at Rochester January 30, 1865, Mr. Charlton was educated at that city. Upon graduation from school, he entered the employ of his father, a nurseryman, and later was taken into the firm known as John C. Charlton & Son. This business was later sold to Joseph M. Charlton, a brother of John A., who, with a son, J. Howard, established another nursery firm.

John A. Charlton was married in 1900 to Miss Emma Allen, who survives him, with the son, J. Howard; a daughter, Mrs. Chester J. Leader; the brother, Joseph M., and two sisters.

Funeral services were held at the home June 2, with interment at Oakwood cemetery, Penfield, N. Y.

Julius V. Burgevin.

Julius V. Burgevin, for the past fourteen years landscape architect of the park board of New York city, died June 6 in the Morrisania hospital, Bronx, his death following injuries received when struck by a motor truck May 28.

Mr. Burgevin was born at Kingston, N. Y., sixty-five years ago. At about 40 years of age he opened a florist's shop there. He subsequently increased the scope of his business so that his chief duties were in the planning and care of large estates around Kingston. Ultimately, he moved to New York, where he undertook the landscaping of various Long Island properties. Finally, he was appointed superintendent of New York parks, in which office he continued until 1920, when he was appointed landscape architect to the park board. Evidences of his skill are to be seen in the Dutch gardens in Van Cortlandt park and the sunken gardens in Bronx park.

He resided at 2349 Davidson avenue, Bronx. Funeral services were held Sunday, June 10, in St. Simon Stock church, Bronx, with interment taking place at Kingston. He is survived by his widow, three daughters and a son, G. David Burgevin.

ARTHUR BENNETT HYDE, son of H. A. Hyde, Watsonville, Cal., was graduated from the University of California last week. His university course embraced landscape engineering and architecture, and he will enter business with his father and a brother, Clifford.

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Herbaceous Perennials

Comments on Less Common Varieties

MONARDA DIDYMA.

The combination of a reviving interest in herb gardens and beauty as border plants should make the monardas good property for the grower with a local trade. And the newer kinds, like Cambridge Scarlet and Salmonea, find a much wider demand than the type. It is not necessary to take space here to go into details regarding Monarda didyma, for it is well known and needs no extended comment. It is mentioned as a possible source of profit now that herbs are popular. Propagation is by cuttings or division.

LINUM HIRSUTUM.

Linum has much good to offer the gardener and not a little that is rather rare in this country. The subject of this paragraph, Linum hirsutum, qualifies for both of these roles. It is a downy-leaved plant from Asia Minor, growing a foot to eighteen inches high and producing an incredible number of lavender pink flowers, an inch to an inch and a half across, all during June and most of July. Like most flaxes, it is an easy subject for common garden treatment in any sunny spot and comes readily from seeds. This is an uncommon plant that should prove to the neighborhood grower a paying addition to his list.

Speaking from the garden point of view, I have seen no difference between L. hirsutum and L. pubescens. Plants under the first name are well distributed among European gardeners and appear in most of their plant and seed lists, but it is not mentioned in Bailey's Cyclopedia, though the last name is given minor notice in the fine print at the end of the linum article. I suspect they are one and the same species.

ROSA SPINOSISSIMA HISPIDA.

The beginner in gardening usually has to have double flowers of monstrous size and, possibly, bizarre coloring to make him happy. That is one reason rose species have had little recognition in America. Now that we are about ready to graduate from the kindergarten class horticulturally, the species will find a place in our gardens and then the subject of our sketch, Rosa spinosissima hispida, will come into its own. A plant that is hardy, is vigorous enough to make easy handling for the amateur and is decorative over a long period deserves to be popular. This rose answers all these requirements. It is taller than the type spinosissima, growing to five or six feet in height under good culture, and is clothed in bright green leaves made up of five to eleven leaflets. In June, when it comes forth in its robe of light yellow, it shows how beautiful a rose can be. And then again in autumn, when the leaves take on their vivid hues, it shows how beautiful fall foliage can be. In addition to all this, the stems are densely set with reddish brown bristles, making this variety an ornament at all seasons. Give it a poor dry soil to get the best autumn effects.

ASPERULA HIRTA.

Asperula hirta, woodruff, is one of the few tiny furry plants that can be trusted to an inexperienced gardener with any assurance of success. And it is a beauty, too, surpassing in the latter sphere all of the asperulas that I have had with two or three exceptions. And the latter are either balky under average garden conditions or it is almost impossible to get them. A. hirta makes neat mats of gray which support numberless pinkish flowers in June. All the plant needs is sunshine and a light soil.

POLYGONUM AMPLEXICAULE.

I am commencing to wonder if true Polygonum amplexicaule is in American trade. Among plants under this label from three sources some turned out to be P. Muhlenbergii, a native species of wide distribution, which I could have collected in my own locality in a number of forms from the aquatic to the dry land kinds. Another kind proved to be variety terreste of P. amphibium. I had the true plant a few years ago from European seeds, but inadvertently let all of it get away from me. What I started out to say, though, was that in P. amplexicaule (the true Himalayan species) we have a fine midsummer perennial that should be made more of. It is a strong upstanding plant, attaining a height of three feet if the soil is not too dry and carrying spikes of blood-red flowers over a long period. I suspect that it would make a good cut flower, though my notes contain nothing on that phase of the subject and I have never seen it mentioned.

IRIS ARENARIA.

I am not able to pass upon the point brought out by Hasselbring in his account of the genus iris in "The Standard Cyclopedia of Horticulture" where he says that Iris arenaria is a synonym of I. flavissima, being a small version of the latter. But I can say, with all others who have grown the little sand iris, that it is one of the gems of the race—a gem not alone because of its beauty, but because of its ease of culture as well. Instead of the six or eight inches of I. flavissima, I. arenaria is usually about two inches high, carrying its jaunty yellow flowers, set off with orange beards, with a certain grace.

I. arenaria was never a strong grower with me, spreading slowly in the dry sandy soil given it. And from the price at which it is held, I suspect that others find it equally slow to increase. I have gone back over my notes of former years and find one which seems, from the vantage point of experience, to tell me that the plant would do better if given more moisture. The note which gives me this clew records the fact that I. arenaria made much better growth than common when it was given a place among I. laevigata. And the latter is always best where it does not get dry, though perfect drainage is

AMERICAN NURSERYMAN

another part of its needs. These observations are given for what they are worth and I suspect they hold more than they first appear to.

ASPERULA CAPITATA.

One can never tell what a packet of unknown seeds will bring forth. Often times not the result may be no more than a weed, but sometimes a real gem appears among them. These observations are brought to mind by the subject of this paragraph, Asperula capitata, which came to me in 1929 in a lot of unknown seeds from a European botanic garden. Out of the lot of close to 200 packets less than half a dozen possessed enough garden merit to warrant propagation, but I believe A. capitata was worth the effort it took to grow the entire lot.

A. capitata is a small thing, making

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a dense tuft of dark green leaves, fuzzy while they are young, over which shine little pink star-like tubes. I should say that this is what they should do, according to an English friend who has the plant, though I have not yet succeeded in making it flower the way he says it does for him. Hope springs eternal, so all one can do is to hope that the right combination may be struck. I have no idea where the species came from originally, but it is hardy here in temperatures as low as 30 degrees below zero. An English plantsman listed it in his 1933 catalogue, so we may be able to get seeds of it soon.

DRABA PYRENAICA.

Correctly speaking, the plant known by the name of *Draba pyrenaica* should be *Petrocallis pyrenaica*. That is according to the best botanists of the present, but the plant is so firmly embedded in garden literature as a draba it is not going to be easy to make the change. The distinguishing characteristics are of such a technical nature they are of little interest to the gardener. The points of interest to gardeners are the facts that in the plant we have a little crucifer of more than passing beauty and one that is not so easy as some others in the climate of the middle west.

A number of correspondents have complained that the plant is not able to stand our hot summers, a conclusion that I reached after three or four trials. However, after experimenting with it in soil differing in moisture content, I am of the opinion that it will prove quite permanent if given sufficient moisture. This is true of a number of alpine crucifers. Correvon recommends wall treatment for the plant under discussion, but it never went through a summer for me under such treatment. Given a flat plain which does not shed moisture but permits it to soak in rapidly, this is one of the good crucifers, whether we call it draba or petrocallis. Good drainage is, however, essential and a growing medium that does not dry out too rapidly is to be preferred. It is a 2-inch plant, flowering in late May and June, with flowers rosy lavender or rosy purple, according to the way one looks at such matters.

CROCUS BYZANTINUS.

We shall let the crocus at the head of this paragraph serve as the text of a little sermon or, rather, a fervent plea, rather than the subject of a botanical description or horticultural preaching. *Crocus byzantinus*, as it is treated here, is an example of a large group, ranging from *abelia* to *zygophyllum*, alphabetically speaking, much desired by the advanced gardeners of the present and due for far more searching after by the gardeners of the future. But no amount of searching throughout the United States will do any good in some cases, and in the case of this crocus it will do more than I have ever done if a commercial source of American-grown corms is found. To be sure, Holland-grown corms are to be had, but they usually arrive a month or two after they should have been in the ground, and as a consequence, few of them survive. These facts account

for the scarcity of *Crocus byzantinus* in American gardens. They point, too, I believe, to a number of opportunities for American plant growers.

There are thousands of plant growers in the country all growing and trying to sell the same plant material. The result is an overproduction of most of the common items and, consequently, a selling price that is often below the cost of production. Would it not be better for growers as well as those who look to us for their garden material if part of this energy were expended on plants which are not now available in quantity? If horticulture is to occupy the place it should in the life which we have had pictured to us in the new deal, growers must begin now, if the start has not already been made, to supply gardeners with a few plants besides geraniums and creeping Charlie. Please understand that I hold no brief against any plant or plants, but I am vitally interested in seeing American horticulture take its rightful place in our lives, something which cannot come about under the system we have been following during the past few decades of mass production.

This has been mostly unconnected with the subject of our sketch except that *Crocus byzantinus* is one of the fall-blooming species which American gardeners want and can seldom get when they want it. This little charmer comes to us from Hungary and southeastward in Europe, where it dots the landscape during fall with its handsome lilac iris-like flowers. Incidentally, its flower characteristics have given it the name of *C. iridiflorus*, which appears to be the accepted name in modern literature rather than the older one of *C. byzantinus*. No crocus that I have tried is hard to grow from seeds, so all one needs are the seeds and a little patience. This is true, too, of most of the material American gardeners are crying for. It means, though, a lot of individual effort rather than big-scale operations.

H. M. HUBBARD, 4247 Hopkins street, Oakland, Cal., recently received a license to operate a nursery.

JOHN W. BANKS has been licensed to engage in the nursery business at 5232 York boulevard, Los Angeles, Cal.

THE Begonia Gardens, 4210 East Anaheim street, Long Beach, Cal., were recently opened by H. P. Dyckman.

Two nurseries were established in Cleveland, O., recently, the Rosedale Nurseries, 10000 Euclid avenue, and the Dover Nursery, Pearl road and Biddleph street.

NURSERYMEN of Santa Barbara, Cal., report that this is the busiest spring they have enjoyed in several years. They attribute this increase in sales to the influence of the flower shows; home owners view the model gardens and decide to landscape their own grounds.

THE Durham & Chacon Nursery was recently opened at Fifty-eighth and Atlantic avenues, Maywood, Cal., by C. J. Durham and R. L. Chacon. Mr. Durham has been a resident of Maywood for twelve years. Mr. Chacon has been associated with the Los Angeles Insecticide Co. in Central America for the past three years. Prior to that time he operated a nursery in Maywood.

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EUROPEAN GRAPES IN EAST.

Popular belief to the contrary, several varieties of high-quality European, or *vinifera* grapes can be grown successfully in the east if one is willing to take the trouble to lay down and cover the wood with soil in the late fall and to retie the wood to the trellis in the spring, says Prof. Richard Wellington, fruit specialist at the New York state experiment station, at Geneva. The growing of European grapes cannot be recommended as a commercial venture, he says, but it has many attractive features for the amateur because of the novelty and excellence of the large number of varieties.

Also, for those who desire grapes possessing the characteristics of the European sorts but which require no winter protection, the experiment station has developed several promising hybrids. Among these are Golden Muscat, Keuka, Seneca, Stout Seedless and Urbana. Planting stocks of these hybrids may be obtained through the New York State Fruit Testing Association, at Geneva, which co-operates with the experiment station in propagating and distributing stocks of new fruit varieties originating on the station grounds.

"The European grape, commonly known as the California grape, has been tested over and over again in the eastern states and all trials recorded as failures," says Professor Wellington. "Unknowingly, these tests proved to be of immense value, for the hybrids arising naturally and artificially between native and European varieties laid the foundation of our present grape industry. All so-called American grape varieties of merit possess one or more European characteristics, such as high quality, tender flesh, long keeping, etc. During the past twenty-five years, over 150 European varieties have been tested at the station, but none has been found that is entirely hardy, although some are harder than others. With care, however, the vines can be carried over the winter, while many hybrids are quite hardy."

Information on the planting and training of European grapes is contained in circular No. 101, which may be obtained upon request to the experiment station at Geneva. A long list of varieties is also presented, together with brief descriptions of the new station hybrids.

AUSTRIAN TREE SEED REPORT.

Reporting on the prospects of the crops of tree and shrub seeds in Europe this year, the firm of Jul. Stainer, Wiener-Neustadt, Austria, states that a complete report cannot be given for three or four weeks. In the meantime, the crop prospects of the fruit tree seeds can be announced.

"On the whole," the firm states, "the blooming of the fruit trees was pretty abundant, but several frosts and a period of about eight weeks without rain destroyed much."

"There will be little *Armeniaca vulgaris* and *Amygdalus Persica*.

"About *Prunus Myrobalana*, *Pyrus communis* and *Pyrus Malus* nothing definite is yet to be said; we must still wait some weeks to see how the fruits develop. Certainly there will be a crop, but not at all a record crop."

"The blooming of *Morus alba* and

Morus tatarica was good, and it seems that the fruits are developing favorably. The crop of *Prunus Mahaleb*, too, will not be bad.

"Especially will it interest and please the growers of fruit trees to hear that this year there will be a good crop of the true wild *Prunus avium sylvestris*, which is well adapted for being grafted. In Austria, a mountainous country, *Prunus avium sylvestris* is resistant against winter."

ROSE REGISTRATIONS.

The registration committee of the American Rose Society approved registrations of the following roses June 11:

Climbing Etoile de Hollande. Climbing Syracuse. Climbing Mrs. William C. Egan. Climbing Duchesse of Atholl. Climbing E. G. Hill. Climbing J. O. Thilow, all of which were originated and registered by the Howard Rose Co., Hemet, Cal., and are identical with the dwarf varieties from which they sprouted in everything except their climbing habit.

Biarney. Climbing hybrid tea. Originated and registered by the Howard Rose Co. A sport from the hybrid tea, Irish Charm, which it resembles in all respects except its climbing habit.

Mme. Emilie Daloz. Hybrid tea. Originated by E. Scuvageot, France; introduced and registered by the Conard-Pyle Co., West Grove, Pa. Reported to be a seedling of Frau Karl Druschki x Souvenir de Georges Pernet. Typical hybrid tea of the Pernetiana type, with satiny rose-pink flowers somewhat like those of Killarney.

Annie Dupeyrat. Hybrid tea. Originated by Charles Mallerin, France; introduced and registered by the Conard-Pyle Co. Reported to be a cross of Mme. T. Hill x Elvira Armande bearing large, moderately fragrant, orange pink flowers of the type of Louise Catherine Breslau.

Sonora Gari. Hybrid tea. Originated by Pedro Dot, Spain; introduced and registered by the Conard-Pyle Co. Reported to be a hybrid of Constance x Mari Dot, with large double flowers of deep apricot color.

F. Cambo. Hybrid tea. Originated by Pedro Dot; introduced and registered by the Conard-Pyle Co. Reported to be a hybrid of Li Bures x Florence L. Izzard. Said to produce large, semidouble, orange copper-colored flowers somewhat like those of Li Bures, with a strong fragrance of the sweet shrub, or calycanthus.

Angel's Mateu. Hybrid tea. Originated by Pedro Dot; introduced and registered by the Conard-Pyle Co. Reported to be a hybrid of Duquesne de Penasards x Magdalena de Nublo. Flowers are double, large and of bright coral color, with a moderate fragrance resembling ripe blackberries.

Fen Pernet-Ducher. Hybrid tea. Originated by Charles Mallerin, introduced and registered by the Conard-Pyle Co. Reported to be a seedling of Julien Potin x Margaret McGredy, bearing light yellow flowers somewhat resembling La France in form, with the edges of the petals slightly lemon with a faint pink flush. It has a strong fruity odor and is a tall, branching plant.

Heiri Mallerin. Hybrid tea. Originated by Charles Mallerin; introduced and registered by the Conard-Pyle Co. Reported to be a hybrid of Mme. Van de Voorde x an unnamed seedling. Large, double, high-centered flowers of brilliant red, resembling E. G. Hill, with a strong Damask perfume.

American Girl. Hybrid tea. Originated and registered by Paul L. Maton, Pana, Ill., as a seedling from Hollywood. Produces large buds and double, high-centered flowers with a strong, rich fragrance similar to that of American Beauty. Under glass, it is reported to stand more heat in summer, to produce less blind

wood than does Hollywood and to resemble Matchless in growth, although it produces blooms with longer stems.

Monterey. Hybrid tea. Originated and registered by Francis E. Lester, Monterey, Cal. A seedling of The Queen Alexandra, producing light golden yellow flowers flushed with rose and veined and edged crimson. It is said to be remarkably large and distinctive in form and to be a free, continuous bloomer all season.

Rouge. Polyanthus. Originated by H. A. Verschuren, The Netherlands; introduced and registered by the Jackson & Perkins Co., Newark, N. Y. A brilliant scarlet crimson variety resembling Lafayette in habit. Reported to be a good, continuous bloomer.

Angèle. Hybrid tea. Originated by L. Pohissa, Spain; registered by the Jackson & Perkins Co. Reported to be a seedling of Angele Pernet x Comtesse de Castilleja, resembling Mme. Butterly in form, producing large, reddish brown buds and double, moderately fragrant flowers, sorrel brown on the outside, with heavy yellow veins, and rich apricot on the inner surface of the petals. A robust plant, reported to be excellent for forcing.

Sorrel. Hybrid tea. Originated by J. H. Nicolas; registered by the Jackson & Perkins Co. Reported to be a cross of unnamed seedlings. Flowers resemble Briarcliff in form and have a rich, tawny brown color distinct from others in this class.

Rheingold. Hybrid tea. Originated by M. Leendert, The Netherlands. Registered and introduced by the Jackson & Perkins Co. Raised from Mme. T. Hillas crossed with an unnamed seedling. A double, dandelion-yellow flower, resembling Columbia in form. Plant is bushy and branching and is a free bloomer for its type.

G. A. Stevens, Sec'y.

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Changes in the past three years have made your old mailing list out of date, no matter how good it was. You can save on postage and printing in mailings to the trade this season by addressing only those whose orders you want and whose orders are worth having.

From our current credit reports we have compiled a list of florists, nurserymen and seedsmen that includes just such names and only them. Each name is rated as "Good" or "Fair." Each name is also marked with the branch of the industry: Florist wholesale, Florist retail, Florist grower, Nurseryman retail, Nurseryman wholesale, Seedsman, Grower of outdoor flowers, Bulb grower.

No such list is obtainable elsewhere at any price. It is offered you at a low charge because we know many firms want it—they need it vitally at this time. One mailing will save the cost of the list. The credit information will save it many times thereafter.

Names are listed alphabetically by towns in each state. You can buy the list by states at the rate of \$1.00 per hundred names (minimum charge, \$5.00). Send a list of the states you want, and we will immediately forward the list with invoice to cover.

Complete List (4,631 names) \$25.00

National Nurserymen's Credit Bureau, Inc.
612 N. Michigan Ave., Chicago, Ill.

State	names
Alabama	41
Arizona	7
Arkansas	22
California	136
Colorado	80
Connecticut	129
Delaware	20
District of Columbia	10
Florida	62
Georgia	61
Idaho	17
Illinois	280
Indiana	153
Iowa	97
Kansas	66
Kentucky	48
Louisiana	26
Maine	37
Maryland	35
Massachusetts	179
Michigan	211
Minnesota	84
Mississippi	15
Missouri	129
Montana	13
Nevada	2
Nebraska	70
New Hampshire	12
New Jersey	264
New Mexico	6
New York	676
North Carolina	7
Ohio	480
Oklahoma	43
Oregon	48
Pennsylvania	459
Rhode Island	58
South Carolina	24
South Dakota	11
Tennessee	42
Texas	93
Utah	23
Virginia	56
Washington	56
West Virginia	29
Wisconsin	115
Wyoming	2
Total	4,631

PERENNIALS FOR TENNESSEE.

I am not well posted on hardy perennial plants, and there is a fair demand for these plants here, but I am losing out on the deal. Will you kindly give me a list of at least twelve kinds of hardy plants that are all-around desirable for bedding and for retail trade in this location? I mean plants that I can guarantee to be hardy. I do not have money with which I can buy dead stock, so I need a sure-fire list, as near as you can give me one. I want to get stock of hardy plants now so I can grow them on, propagate them and be ready for 1935 spring sales.

J. H. B.—Tenn.

The following list of sure-fire perennials can be recommended for your clientele:

Alyssum saxatile—Goldentuft, or basket of gold. The form compactum is largely used in rock gardens.

Aquilegia—Columbine. Available in a great variety of colors and strains.

Coreopsis—Coreopsis, or tickseed. Double form is a good seller.

Chrysanthemums—Hardy chrysanthemums. Good varieties are always in great demand.

Chrysanthemum coccineum (Pyrethrum roseum and *P. hybrida*)—Pyrethrum, or painted daisy. Available in various colors.

Dianthus barbatus—Sweet william. Available in various colors.

Gaillardia—Blanket flower. Numerous fine strains and named varieties are available.

Heuchera—Coral-bells. Numerous species and varieties are available and all are excellent.

Iberis—Perennial candytuft. Several species are available. All should be hardy in Tennessee.

Linonium latifolium (*Statice latifolia*)—Big-leaf lavender. This is an everlasting.

Linum perenne—Perennial blue flax.

Lychine—Maltese cross, rose campion, etc. All types are in demand.

Monarda didyma—Bee balm, or Oswego tea.

Phlox subulata—Moss phlox, or moss pink. This may be obtained in four or five different colors, such as alba, lilacina, rosea, atrorubens and Vivid.

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Physostegia virginiana—False dragonhead. All varieties are good, especially Vivid.

Scabiosa caucasica—Caucasian, or perennial scabiosa.

Verbena—Hardy verbena. All of the best strains which are wild in parts of Tennessee.

THE firm name of the Columbus Nursery & Landscape Co. has been changed to C. A. Mauzy & Sons, 2001 Home avenue, Columbus, Ind.

LARCHMONT NURSERIES, INC., 285 Boston Post road, Larchmont, N. Y., has been incorporated. Tony Rodriguez is listed as proprietor.

GEORGE PETERS & SONS, INC., Hempstead, N. Y., has established what is known as the Nursery & Plant Market on its nursery plot of about six acres at a corner of South Franklin street and Graham avenue, immediately opposite the firm's big rose range. A large service building, which will be open daily throughout the year and during evenings in the planting seasons, has been erected. The grounds adjacent to the building have presented a brilliant appearance, with large displays of azaleas and other flowering shrubs, also perennials. Notable in the displays were red and white flowering dogwoods, red maples, boxwoods and other specialties.

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Recent Publications

Books and Bulletins of Trade Interest

"COMMERCIAL FERTILIZERS."

Gilbeart H. Collings, associate professor of agronomy at Clemson Agricultural College, is author of "Commercial Fertilizers," a textbook. The author bases his 316-page discussion of commercial fertilizers on information derived from many years' experience as an experiment station agronomist and teacher of soil, fertilizer and crop courses. Each chapter was read in manuscript form and criticized constructively by experts on the particular subject to which the chapter referred. Thus, the book represents the consensus held by authorities in the fertilizer industry.

The book presupposes that the reader possesses a knowledge of technical terms found in texts on agronomy, botany, chemistry, geology and soils. Furthermore, the reader will find this a comprehensive book; the author has treated each of the many phases of his subject in detail.

The first chapter comprises a survey of the origin and development of the use of commercial fertilizers. Then follows a consideration, at some length, of the source and use of various specific fertilizers. Principles underlying the purchase and use of fertilizers are evolved. The last chapter discusses the application of fertilizers and their influence on germination and seedling growth.

The volume is published by Blakiston's Son & Co., Inc., and is priced at \$3.25, plus 15 cents postage.

"GARDENER'S HANDBOOK."

Readers of books on gardening, who gave L. H. Bailey's earlier work, "The Gardener," an enthusiastic reception, have been, no doubt, expectantly awaiting the publication of its successor, the "Gardener's Handbook." The new book will not disappoint them.

Mechanically, the "Gardener's Handbook" is far superior to its predecessor. It is set in larger type and is, in consequence, much more easily read. Alpha-

betical arrangement of the topics discussed enables the reader to find the particular bit of information he wants at the particular moment he wants it. Furthermore, illustrations have been used to clarify spots in the text which might puzzle the average reader. In this way the need for footnotes or explanatory paragraphs of fine print is obviated.

The book comprises information which the amateur gardener and home maker will find helpful in growing ornamental annuals and perennials and in raising vegetables and fruits. Hundreds of plants are described as to appearance, habitat and planting season. Furthermore, special advice is given on such a wide variety of topics as vines, rock gardens, window gardens, glasshouses, hot-beds and control of insects and plant diseases. Considering the extremely wide field of subject matter covered, the 292 pages of the "Gardener's Handbook" are surprisingly elucidative.

The "Gardener's Handbook" is published by Macmillan Co.; the price, \$3, plus 15 cents postage.

FOR PROGRESSIVE GROWERS.

"Commercial Flower Forcing," by Alex Laurie, professor of floriculture at the Ohio State University, Columbus, and L. C. Chadwick, assistant professor of floriculture there, is virtually alive with ideas that progressive growers or those with technically trained backgrounds can use to great advantage. The book contains eighteen chapters, opening with "Status and Development of the Industry" and closing with "Costs of Production." Most of the information in the latter chapter has been presented by Professor Laurie to groups at short courses and growers' meetings, but even those persons who have been fortunate to hear him will be glad to have the data available in permanent form.

"Greenhouse Construction and Heating," the subject of chapter three, is

covered adequately for a book of this kind, the main purpose of which is to present the fundamentals of flower forcing and their practical application to the culture of greenhouse crops.

A chapter is devoted to each of the following subjects: "Soils," "Fertilizers," "Reproduction" and "Diagnosing Greenhouse Ills." A wealth of exceptionally valuable and usable information is presented in these chapters, the application of which would save almost any grower countless times the cost of the book, which is \$4, plus postage.

The home mixing of fertilizers is detailed. Besides that there is a soils and fertilizers table, giving at a glance the soil reaction, soil mixture, fertilizer requirement and rate of application for practically every cut flower and pot plant grown in greenhouses. Similar data are given for numerous annuals. Another table that growers will find of great value is one on the propagation and timing of crops. For each crop are indicated how it is propagated, time of propagation, time of benching, time of pinching, time of maturity or bloom, the temperature required and miscellaneous remarks. Bench crops, potted plants, including foliage ones, and bulbous items are covered.

Chapters nine to fourteen inclusive are given over to cultural notes on major, minor and miscellaneous cut flower crops, bulbous crops, flowering potted plants and foliage plants. Roses, carnations and chrysanthemums are included in major crops, with somewhat briefer discussions being given to sweet peas, violets, snapdragons, calendulas and orchids in the chapter on minor crops. The culture of thirty-seven miscellaneous crops is covered briefly in chapter eleven, including asters, daisies, clarkias, euphorbia, gypsophila, gardenias, gerberas, mignonette, stachys, statice, stocks, venidium, etc.

Flowers grown from bulbs, corms and tubers are treated separately. About forty items are included in the chapter on flowering potted plants, with nearly thirty more being discussed under foliage plants.

The lengthy discussions in chapters two and four, entitled respectively, "Plant Structures and Their Function" and "Factors Influencing Plant Growth," might well have been greatly condensed,

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HORTICULTURAL BOOKS

Here are listed those found most useful by nurserymen; others can be obtained at publishers' list prices through *The American Nurseryman*.

Modern Nursery—Laurie and Chadwick.....	\$ 5.00	Cultivated Conifers, The—Bailey.....	\$ 7.50
Landscape Design, Introduction to the Study of Hubbard and Kimball.....	6.00	Spraying, Dusting and Fumigating of Plants—Mason.....	3.00
American Plants for American Gardens—Roberts and Rehmann.....	2.15	Informal Gardens—Orloff.....	1.60
Roadside Development—Bennett.....	5.00	Landscape Gardening—Simonds.....	2.65
Principles and Practices of Pruning—Kains.....	2.65	Roses—Rockwell.....	1.10
Rock Garden and Alpine Plants—Correvon.....	3.00	Azaleas and Camellias—Hume.....	1.65
Pecan Growing—Stuckey and Kyle.....	3.15	Lawn, The—Dickinson.....	1.35
Hardy Shrubs—Waugh.....	1.35	Book of Bulbs, The—Rockwell.....	2.15
Modern Roses—McFarland.....	5.00	Book about Roses, A—Hole.....	1.90
Garden Maintenance—Orloff and Raymore.....	2.65	Irises—Rockwell.....	1.10
Lilac Culture—Wister.....	1.35	Cherry and Its Culture, The—Gardner.....	1.35
Book of Trees—Hotte.....	3.65	Bush Fruit Production—Van Meter.....	1.35
Book of Shrubs—Hotte.....	3.15	Fertilizers, Handbook of—Gustafson.....	1.35
Shrubs—Rockwell.....	1.10	Tree Fruits, Modern Propagation of—Brown.....	1.65
Hardy Evergreens—Schrepfer.....	1.35	Tree Diseases, Manual of—Rankin.....	3.40
Nut Growing—Morris.....	2.65	Tree and Shrub Insects, Manual of—Felt.....	3.65
Garden Pools—Ramsey and Lawrence.....	2.65	Insects and Diseases of Ornamental Trees and Shrubs	
Strawberry, The—Fraser.....	1.35	—Felt and Rankin.....	5.00
Roadside Marketing—Watts.....	1.35	Bush Fruits—Card.....	2.65
Pear and Its Culture, The—Tukey.....	1.35	Gardening in the Lower South—Hume.....	5.00
Grape Growing, Manual of American—Hedrick.....	3.15	Plant Buyer's Index, The—Manning.....	10.00
Greenhouses; Their Construction and Equipment—Wright.....	2.15	Care of Ornamental Trees, The—Carpenter.....	1.35
Practical Landscape Gardening—Cridland.....	2.65	Climbing Roses—Stevens.....	2.15
		Pioneering with Wildflowers—Aiken.....	2.15
		Plant World in Florida, The—Nehrling.....	3.65
		Cyclopedia of Horticulture—Bailey.....	20.00

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giving more attention in many instances to more specific cultural details, which are particularly inadequate in chapter fifteen on "Forcing Hardy Plants," a subject on which many florists are seeking more information.

The two chapters not yet mentioned are "Outdoor Crops" and "Wholesale Marketing," the latter subject being covered well by James Sykora, Chicago. The book contains 520 pages, with forty-nine illustrations. It is published by P. Blakiston's Son & Co.

With the prevailing interest in production costs, the proper use of fertilizers, new crops, new methods and the many other important subjects thoroughly covered in this new book, it will probably become the right-hand reference volume for all progressive growers, as well as a text for students specializing in this field.

BULLETINS RECEIVED.

"How Much Nitrogen Do Apple Trees Need?" by R. H. Roberts. Bulletin No. 427 of the agricultural experiment station at the University of Wisconsin, Madison. This review of the nitrogen needs of apple trees from the standpoint of the relation of growth condition and fruiting response has been prepared, it is stated, because of ac-

cumulating evidence of the excessive use of nitrogen in some orchards. It urges consideration of soil differences, varieties and individual differences in trees of the same age.

"Vegetative Propagation of Trees and Shrubs by Means of Summer Cuttings," by N. K. Vekhov and M. P. Iljin. A comprehensive report in Russian, with summaries in English, from the Lenin Academy of Agricultural Sciences in the U. S. S. R., issued by the institute of plant industry. Related are the experiments conducted from 1925 to 1931 at the Forest Steppe experimental station and at the Bratzevo experimental station. In the experiment, 599 varieties and forms of trees and shrubs, belonging to 479 species and 118 genera, were used, 118,000 cuttings being represented.

"Manganese an Essential Element for Green Plants," by Edwin Fraser Hopkins. Memoir No. 151 of the New York agricultural experiment station, Ithaca, which is a presentation of the records of experiments conducted over a number of years, studying two species of unicellular green algae grown in culture solutions with and without manganese. Growth ceased and death resulted when manganese was absent, it was found.

"Ornamental Trees for New York State," by R. W. Curtis and Donald Wyman. Bulletin No. 287 published by the New York State College of Agriculture, at Cornell University, Ithaca. The 32-page pamphlet not only provides a comprehensive list of trees hardy in New York, but names groups for various uses and offers valuable pointers on the planting and care of specimens.

"Studies in Plant Propagation," by

L. C. Chadwick. Bulletin No. 571 published by the New York agricultural experiment station, at Cornell University, Ithaca. This is a comprehensive illustrated report on experiments made to determine the influence of chemicals, of the medium and of the basal cut on the rooting of evergreen and deciduous cuttings.

"History, Culture and Varieties of Summer-flowering Phloxes," by A. M. S. Pridham. Bulletin No. 588, published March, 1934, by the Cornell University agricultural experiment station, Ithaca, N. Y. A valuable bulletin made up of thirty-two pages and containing eighteen excellent half tones. The remarks on varieties could be used advantageously by a florist or nurseryman in selecting a collection to handle. The early-flowering species of phlox, including the subulata, divaricata and ovata groups, are also discussed.

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